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EDITED BY

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CONTENTS.

THIRD SERIES, No. CCXLVII.—JULY 1, 1892.

PART I.—ORIGINAL COMMUNICATIONS.

PAGE

ART. I.—Clinical Observations on Pleural Effusion with Displacement of the Heart. By W. LANGFORD SYMES, L.R.C.P.I., &c., Kiltegan, Co. Wicklow—(Illustrated), - - - - - - 1

ART. II.—Trephining for Meningitis. By J. S. M'ARDLE, F.R.C.S.I.: Surgeon and Lecturer on Clinical and Operative Surgery, St. Vincent's Hospital—(Illustrated), - - - - - 17

ART. III.—The Desirability of Operative Interference in Suspected Perforation of Chronic Ulcer of the Stomach. By ALFRED R. PARSONS, M.B. (Univ. Dubl.); late House Surgeon in Sir P. Dun's Hospital, - - - - - - - - - 26

ART. IV.—Notes on Epidemic Influenza, 1891–92. By E. MACDOWEL COSGRAVE, M.D., F.R.C.P.I.; Physician to Whitworth Hospital, Drumcondra, and Cork-street Fever Hospital: Professor of Biology, Royal College of Surgeons, - - - - - - 35

PART II.—REVIEWS AND BIBLIOGRAPHICAL NOTICES.

1. Bacteriological Diagnosis: Tabular Aids for Use in Practical Work. By JAMES EISENBERG, Ph.D., M.D. Translated and augmented, with the permission of the Author, from the Second German Edition, by NORVAL H. PIERCE, M.D., - - - - - 39

2. The Principles and Practice of Medicine, designed for the use of Practitioners and Students of Medicine. By WILLIAM OSLER, M.D., F.R.C.P.; Professor of Medicine in the Johns Hopkins University; Physician-in-Chief to the Johns Hopkins Hospital, Baltimore; formerly Professor of the Institutes of Medicine, M'Gill University, Montreal; Professor of Clinical Medicine in the University of Pennsylvania, - - - - - - - 40

3. Royal University of Ireland. The Calendar for the Year 1892. Examination Papers, 1891, - - - - - - 42

PAGE

4. A Treatise on the Ligation of the Great Arteries in Continuity, with Observations on the Nature, Progress, and Treatment of Aneurysm. By CHARLES A. BALLANCE, M.S., &c., and WALTER EDMUNDS, M.C., &c., - - - - - - - - 43
5. Tuberculosis and its Successful Treatment. By ROBERT BELL, M.D., F.F.P. & S., &c.; Senior Physician to the Glasgow Hospital for Diseases Peculiar to Women, &c., - - - - - 46
6 Differentiation in Rheumatic Diseases (so-called). By HUGH LANE, L.R.C.P., M.R.C.S.; Surgeon to the Royal Mineral Water Hospital, Bath; Hon. Medical Officer to the Royal United Hospital, Bath, - - - - - - - - - 46
7. Essays on Acromegaly. By DR. PIERRE MARIE and DR. SOUZA-LEITE; with Bibliography and Appendix of Cases by other Authors, 47
8. The Water-Cure in the Bedroom; or, Hydropathy at Home. By G. H. DOUDNEY, M.B., M.R.C.S. Eng.; late Resident Medical Officer to the Seamen's Infirmary, Ramsgate, - - - 48
9. The Diseases of the Nervous System. By J. A. ORMEROD, M.A., M.D., - - - - - - - - - 48
10. The Dietetic Value of Bread. By JOHN GOODFELLOW, F.R.M.S., 49
11. An Index of Diseases and their Treatment. By THOMAS HAWKES TANNER, M.D., F.L.S. Fourth Edition, revised by PERCY BOULTON, M.D., M.R.C.P., London; Senior Physician to the Samaritan Free Hospital, &c., - - - - - - - - 51
12. Die Behandlung der Tuberculose mit Tuberkulocidin. Verläufige Mittheilung von PROFESSOR D. E. KLEBS in Zürich, - - 52
13. The Essentials of Histology, Descriptive and Practical, for the Use of Students. By E. A. SCHÄFER, F.R.S. Third Edition, - 52
14. The New Sydenham Society's Lexicon of Medicine and the Allied Sciences. (Based on Mayne's Lexicon) By HENRY POWER, M.B., and LEONARD W. SEDGWICK, M.D. Part 17. Mas-Mit, - 53
15. Materia Medica and Therapeutics. Vol. I.: By J. V. SHOEMAKER, M.D., and J. AULDE, M.D. 1889. Vol. II.: By J. V. SHOEMAKER, M.D. 1891, - - - - - - - 53
16. Leçons de Thérapeutique. Par G. HAYEM. 3^{me} Série. Les Médications, - - - - - - - - - 54
17. Lectures on Children's Diseases. By DR. E. HENOCH. Vol. II. Translated from the Fourth Edition (1889) by J. THOMSON, M.B., F.R.C.P. Edin., - - - - - - - - 54
18. The Lord of Humanity, or the Testimony of Human Consciousness. With Supplement on the Mystery of Suffering. By FREDERICK JAMES GANT, F.R.C.S. Second Edition, - - - - 55
19. Pye's Surgical Handicraft. Third Edition. Revised and Edited by T. H. R. CROWLE, F.R.C.S., &c., - - - - 56
20. Abdominal Surgery. By J. GREIG SMITH, M.A., F.R.S.E.; Surgeon to the Bristol Royal Infirmary, &c. Fourth Edition, - - 56

PAGE

21. Materia Medica, Pharmacy, Pharmacology, and Therapeutics. By W. HALE WHITE, M.D., F.R.C.P., - - - - - 57
22. The Rheumatic Diseases (so-called), with Original Suggestions for more Clearly Defining Them. By H. LANE, L.R.C.P. Edin., and C. T. GRIFFITHS, L.R.C.P. Lond., - - - - - 57
23. Tables for the Diagnosis and Treatment of Syphilis. By J. K. BARTON, M.D., Senior Surgeon to the Adelaide Hospital, and Past President, R.C.S.I. Third Edition, - - - - - 58

PART III.—SPECIAL REPORTS.

REPORT ON PUBLIC HEALTH. By SIR CHARLES A. CAMERON, M.D.; ex-President, Diplomate (*Honoris Causâ*) in Public Health, and Professor of Chemistry and Hygiene, R.C.S.I.; President of the British Institute of Public Health, and of the Irish Medical Association; Examiner in Sanitary Science, Royal University; D.P.H. (Camb.); Medical Officer of Health for Dublin, &c.:—

On some Points in the Ætiology of Typhoid Fever—(Illustrated), 59

PART IV.—MEDICAL MISCELLANY.

ROYAL ACADEMY OF MEDICINE IN IRELAND:—

SECTION OF MEDICINE.

The Desirability of Operative Interference in Suspected Perforation of Chronic Ulcer of the Stomach. By DR. PARSONS, - - 76
Detachment of Retina. By MR. STORY, - - - - - 78

SECTION OF SURGERY.

Trephining in Cerebral Meningitis. By MR. M'ARDLE, - - 78
Electrolysis in Affections of the Male Urethra. By DR. PEARSON, 79

SANITARY AND METEOROLOGICAL NOTES. Compiled by J. W. MOORE, B.A., M.D., Univ. Dubl.; F.R.C.P.I.; F.R. Met. Soc.; Diplomate in State Medicine and ex-Sch. of Trin. Coll. Dubl.:—

Vital Statistics for Four Weeks ending Saturday, May 21, 1892, 82
Meteorology—Abstract of Observations made at Dublin for Month of May, 1892, - - - - - - - - 87

PERISCOPE:—
Treatment of Tuberculosis by Iodoform Inunctions. - - 38
Simple Urinary Tests, - - - - - - - - 81
Ehrlich's Test of Urine in Typhoid Fever, - - - - 91
Tuberculin in the Diagnosis of Tuberculosis in Cattle, - - 92
Percentage of Deaths in Chloroform Administration, - - 92
The Influence of Heredity, - - - - - - - 92
Unique Case of Intussusception, - - - - - - 93
The Harvard Medical School Association, - - - - 93
Medico-Chirurgical Society, Glasgow, - - - - - 93
Popular Prescriptions. - - - - - - - - 93

IN MEMORIAM—WILLIAM COLLES, M.D., Univ. Dubl., F.R.C.S.I., - 94

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Antimony Tartrate, 1/50 gr.
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Apomorphine Mur., 1/50 gr.
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Bismuth Sub nit., 5 and 10 gr.
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*Calcium Sulph., 1/10 gr
Calomel, 1/10, ½, and 1 gr.
Capsicum Tinct., 1 min.
*Cascara Sagrada Ext., 2 gr.
*Cascara Comp. (*Cascara Dry Ext.*, 1 *gr.*; *Euonymin*, ½ *gr.*; *Nux Vomica Ext.*, 1/16 *gr.*; *Hyoscyamus Dry Ext.*, 1/8 *gr.*)
*Cathartic Comp., U. S. P (*Ext. Coloc. Co. Pulv.*, 1 1/3 *gr.*; *Ext. Jalapæ Pulv.*, 1 *gr.*; *Hyd. Sub-chlor.*, 1 *gr.*; *Cambogiæ Pulv.*, ¼ *gr.*)
Charcoal, 5 gr.
Chloralamide, 5 gr.
Chloral Hydrate, 5 and 10 gr.
Cocaine Mur., 1 gr.
Cocaine with Potash and Borax (Voice).
Cretæ Aromat. cum. Opio Pulv., 5 gr. (Aromatic Confection with Opium.)
Dialysed Iron, 10 min
Digitalis Tinct., 1 min.
Digitalin, 1/100 gr.
Diuretin-"Knoll," 5 gr.
Dover Powder, ½ and 5 gr.
Euonymin Resin, 1/8 gr.
Exalgin, 2 gr.
Ferrum Redactum, 2 gr.
Gregory Powder (see Rhubarb Comp. Pulv.).
Hydrarg. cum. Creta, 1/3, ½, and 1 gr.
Hydrarg. Iod. Rub., 1/20 gr.
Hydrarg. Iod. Vir., 1/8 gr.
Hydrarg. Perchlor., 1/100 gr.
Hydrarg. Subchlor. (Calomel), 1/10, ½, and 1 gr.
*Hydrastia Comp. (*Hydrastia Mur.*, ¼ *gr.*; *Ergotin*, ½ *gr.*; *Cannabin Tannate*, ½ *gr.*)
Ichthyol, 2½ gr.
Ipecac and Opium, 5 gr. (Dover Powder.)
Ipecac. Powder, 1/10 and 5 gr.
Iron and Arsenic Comp. (*Quinine Bisulph.*, 1 *gr.*; *Iron Hypophos.*, 2 *gr.*; *Arsenic*, *Strychnine Sulph.*, *aa* 1/50 *gr.*)
Iron and Quinine Cit., 3 gr.
*Laxative Vegetable (*Res. Podoph.*, *Ext. Hyoscy.*, *Ext. Tarax.*, *aa* 1/4 *gr.*; *Ext. Coloc. Pulv.*, 1 *gr.*; *Jalapæ Pulv.*, *Res. Leptand.*, *aa* 1/2 *gr.* *Ol. Menth. Pip.*)
Lithia Carbonate, 2 gr.
Lithia Co. (Dr. Lane's formula.)
Manganese Dioxide, 2 gr.
Morphine Sulph., 1/100, 1/20, and 1/8 gr.
Naso-pharyngeal (*Sodium Chlorid.*, *Borax*, *Boric Acid*, *Benzoic Acid*, *Menthol*, *Thymol*, *Ol. Gaultheria*, *Cocaine Mur.*).
Nitro-glycerine, 1/100 gr. (see also Trinitrine.)
Nux Vomica Tinct., 1 min.
Opium Tinct. (Laudanum), 2 min.
Papain, 2 gr. (Dr. Finkler & Co.)
Pepsin (Fairchild).
Pepsin, Saccharated, 5 gr.
Peptonic (*Pepsin*, *Zymine*, *Lacto-phosph. Lime*, *p. æq.*).
Phenacetin, 5 gr.
Pilocarpin Mur., 1/20 gr
Podophyllin Resin, ¼ gr.
Potass Bicarb., 5 gr.
Potass Bromide, 5 and 10 gr.
Potass Chlorate, 5 gr.
Potass Chlorate with Borax.
Potass Iodide, 5 gr.
Potash Nit. (*Sal Prunella*), 5 gr.
Potass Permanganate, 1 and 2 gr.
Quinine, 1/10, and ½ gr.
*Quinine (Soluble), 1, 2, 3, and 5 gr.
Reduced Iron, 2 gr.
Rhubarb, 3 gr.
*Rhubarb Comp. (Pill), 3 gr. (*Rhei. Pulv.*, 1½; *Aloe Soc. Pulv.*, 1; *Saponis Pulv.*, 5/8; *Myrrhæ Pulv.*, 5/8 *parts*; *Ol. Menth. Pip.*)
Rhubarb Comp. Pulv. (Gregory Powd). 5 gr.
Rhubarb and Soda, 5 gr. (*Rhei.*, 3; *Sodæ Bicarb.*, 2; *Zingiber*, ½ *parts.*)
Saccharin, ½ gr.
Salicin, 5 gr.
Salol, 5 gr
Santonin, ½ gr.
Soda Bicarbonate, 5 gr.
Soda-Mint or Neutralising "Tabloids" (*Soda Bicarb.*, 4 *gr.*; *Ammon. Carb.*, ½ *gr.*; *Ol. Menth. Pip.* ½ *gr.*)
Soda Salicylate, 3 and 5 gr.
Strophanthus (2 minims of Tinct. in each).
Sulphur Comp. (*Sulph. Præcip.*, 5 *gr.*; *Potass Bitart.*, 1 *gr.*
Tannin, 2½ gr.
Test Tabloids (Fehling's).
Thirst (Effervescent).
Tonic Comp. (*Iron Pyrophos.*, 2 *gr.*; *Quinine Bisulph.*, 1 *gr.*; *Strychnine Sulph.*, 1/100 *gr.*)
Trinitrine (Nitro-glycerine). 1/100 and 1/50 gr.
Trinitrine and Amyl Nitrite.
Trinitrine Comp. (*Trinitrine*, 1/100 *gr.*; *Nitrite of Amyl*, ½ *gr.*; *Capsicum*, 1/50 *gr.*; *Menthol*, 1/50 *gr.*)
Urethane, 5 gr.
Voice (Potash, Borax and Cocaine).
Warburg Tincture, 30 mins. in each.
Zinc Sulphate, 1 gr.
Zinc Sulpho-carbolate, 2 gr.
Zymine (Pancreatin).
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JULY 1, 1892.

PART I.

ORIGINAL COMMUNICATIONS.

ART. I.—*Clinical Observations on Pleural Effusion with Displacement of the Heart.*[a] By W. LANGFORD SYMES, L.R.C.P.I., &c., Kiltegan, Co. Wicklow.

THE subject which I wish to introduce is one, I think, well deserving of investigation, and I trust a brief review of it will not be uninteresting, inasmuch as displacement of the heart in effusions of either pleural sac is sometimes the source of intense anxiety to the clinical physician, occasionally of sudden death to the patient, and ever of great interest to the physiologist. It is well illustrated by the following case, which is no way more remarkable than many others, except perhaps in its being allowed to run so long without being tapped:—

CASE.—A healthy man of twenty was suddenly seized with severe rigors, which lasted for five hours. Two hours after the shivering ceased I found his T. 102·4°, P. 120, Resp. 28; he was very hot and flushed on the left cheek, severe pain shooting through his left lung, unable to draw a full breath, and feeling very sick and faint. On examining his chest I found slight dulness and diminution of free vesicular breathing over the lower lobe of the left lung behind, with peculiar "cogged-wheel" or interrupted respiration. There was loud puerile breathing all over the right lung, but otherwise the chest was healthy. He was ordered a diaphoretic mixture of tinct. aconit.; spt. æth. nit.; with liquor ammoniæ acetatis every two hours, and fever diet, while linseed poultices were continually applied.

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[a] The substance of this paper was read before the Birkenhead Medical Society, Session 1887–88.

Next morning his pulse had fallen to 100, but T. and Resp. still the same. On examining the chest the dulness was more marked, vocal resonance, and all respiratory sounds completely lost over left base; the puerile breathing in the right lung very loud and distinct—in fact, all the usual signs of effusion. The following day (3rd) I was suddenly called to see him, as he had fainted on getting out of bed, but was quite restored when I arrived. The effusion now steadily increased, and on the 4th day his condition was as follows:—Temp. 99·8°, P. 100, Resp. 24. Absolute dulness with resistance, and complete loss of vocal phenomena and breath sounds over the left base as high as the spine of the scapula, crossing in front to the level of the 5th rib. There was no apex beat to be seen or felt anywhere on *either* side of the chest, but the heart was under the sternum, the first sound reaching its maximum intensity at the base of the ensiform cartilage. He complained of great pain in the left shoulder, a troublesome dry cough and slight dyspnœa, these symptoms being the chief ones throughout the attack. He was ordered a mixture of—

℞. Potass. acetatis, gr. 8;
Tinct. digitalis, ♏ 8;
Spt. juniperi, ♏ 15;
Spt. æth. nitrosi, ♏ 20;
Liq. ammon. acetatis, ʒi;
Decoct. scoparii, ℥ss—every 4th hour;

and iodine was applied to the lung.

On the 7th day his T. was 101°, P. 120, R. 24. He lay on his back, inclining towards the right side, saying it was impossible to turn on the left owing to the pain in the shoulder, dyspnœa and anxiety.

By the 8th day the fluid had reached the 2nd rib, dulness extending high up into axilla, crossing midsternum at the 5th rib; notwithstanding, the urine had become very copious, and he had perspired profusely. Decubitus still the same; intercostal spaces depressed and not yielding to the pressure of the fluid. The heart was completely dislocated from the left side, and, protruding from beneath the right border of the sternum, pulsated between the 4th and 5th right costal cartilages. On the 12th day the chest presented a most remarkable condition. The effusion increasing, had encroached still more on the right side, pushing up the left lung under the 1st rib and compressing it against the spine—the only resonant portion being that above the 2nd rib, which elicited on percussion the peculiar tympanitic note described by Skoda and Hudson. This note contrasted remarkably with the full, healthy, resonant sound yielded by the right lung, and the absolute "femoral" dulness over the fluid immediately beneath. The heart was still further displaced to the right, beating at a point one inch above and slightly internal to the right nipple. The first sound, however, was loudest over body of the left ventricle in the sternal end of the 4th interspace. From this date signs of absorption gradually developed, vocal phenomena returning with ægophony and feeble respiration until, on the 18th day (Fig. 1), the fluid had receded to the level of the 4th rib, allowing the heart to return beneath the sternum and the upper lobe of the left lung to once more expand during inspiration; over this area, above the 4th rib, the Skodaic tympany had disappeared, and a peculiar fine crackling crepitation was heard at the end of each inspiration precisely similar to Laennec's first stage of pneumonia. This I attributed to the air for the first time re-entering the smaller bronchi and alveoli of the upper lobe and forcibly separating their walls, which had been so long collapsed from pressure of the fluid.

On the 22nd day, T. 98°, P. 76, dulness still up to 4th rib, heart beating at 5th left cartilage; respiration easy, and he lies chiefly on the left side.

The remaining serum now became rapidly absorbed, and he quickly regained his strength. He was ordered the citrate of iron and ammonia, with counter-irritation to the lung. A fortnight later (32nd day) all effusion had disappeared, and he was quite well and walking about. The heart once more pulsated in its normal position, but seemed more exposed towards the base owing to the incomplete expansion of the lung. A cardio-pleuritic friction sound was now heard over the 3rd rib.

A week later (41st day) I stripped him and made a careful examination of his chest, finding distinct evidence of commencing hypertrophy of the right ventricle, and commencing emphysema of the right lung. The left side of the chest was 2½ inches smaller than the right at 3rd rib, and measured 2 inches less at the level of the 5th rib. There was deficient expansion of the left lung, evidenced by inspection, but particularly when—standing behind him—the sides of the chest were grasped by the hands—the left feeling quite thin like a book, whereas the right was hyper-distended, and felt as if one was endeavouring to grasp a football.

He was ordered syrupus ferri iodidi, and a month later was perfectly well, with the exception of a contracted left side.

The gradual displacement of the heart in effusions of the left pleura affords the most interesting subject for observation and thought at the bedside, as literature on this point is singularly wanting. Many authors do not even allude to it, others give it but a passing notice; while those who attach most importance to it are Dr. Mitchell Bruce[a] and the late Drs. Stokes[b] and

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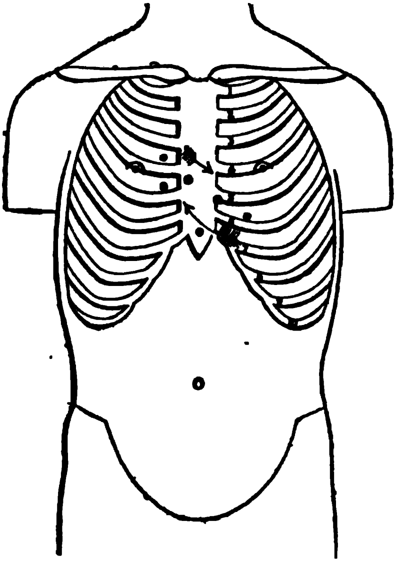
[a] Quain's Dictionary of Medicine. Art. Displacement of the Heart.

[b] Diseases of Chest. 1837. Pp. 449 *et seq.*

Townsend.[a] Professor Finny[b] has, however, contributed by far the most valuable and instructive paper on the clinical aspects of this subject.

Fig. 1.



We observe, first (Fig. 1), that the apex strikes in a position about midway between its normal site and the base of the xiphoid cartilage. As the distension goes on the heart "buries" itself under the sternum, and its impulse is for a time lost. It presently emerges from beneath its right border, pulsating vigorously under the 5th costal cartilage, and as the effusion increases it is dislocated in a direction upwards and to the right. These facts were observed by Stokes as early as 1837. It may now be discovered beating in the right nipple line as high as the 3rd interspace, or, as in an extreme case which I once witnessed, may even pulsate beneath the anterior fold of the right axilla. From this abnormal site it gradually returns as the effusion becomes absorbed, but on close observation will be found to pass back on a plane from ½ to 1 inch higher than its original course, and thus regain its normal position by a shorter and more direct route across the front of the thorax. Now two factors, I believe, exist which combine to

[a] Cyclopædia of Practical Medicine (Forbes). Art. Displacement of Heart.

[b] Transactions of Academy of Medicine in Ireland. Vol. I. 1883.

produce this peculiar alteration in the heart's path. The one is *apparent*, the other *real*, and both are dependent upon the imperfect expansion of the lung. When the effusion becomes rapidly absorbed, and the lung cannot with equal rapidity burst its adhesions and distend its thickened and hypertrophied pleura, the left side commences to fall in, and the ribs become approximated. Each rib will now be found to occupy a more inferior position than it did before with reference to the thoracic viscera, so what is apparently a superior course taken by the heart on its return to the left side may be in reality a depression and approximation of the ribs, making it appear to return on a higher plane. The other factor (and this the most potent, operating before the side falls in, *and while the heart is still to the right of the mesian line*) is a true change in the direction of the heart's path, by which it can with the greatest rapidity again reach the left side. It is, in fact, drawn directly into the potential vacuum caused by the rapid recession of the fluid. These I believe to be the true explanations of this interesting phenomenon, which, if the initial course taken by the heart has been carefully noted, cannot but strike the most casual observer. Again, this superior course of the heart across the chest being, as we have seen, directly dependent upon the non-expansion of the lung, may be found to be proportional to it, an early clinical evidence of it, and a measure of the diminution in its volume—provided, of course, it be not bound by adhesions.

The lung may, however, eventually expand to its former size, and the heart resume its normal position; but such conditions are rare after large or protracted effusions. Moreover, if this expansion be complete and truly *proportional to the absorption of the fluid*, the heart will probably be found to return by its original course. It is evident that the displacement under consideration occurring, as it does, concurrently with the absorption, cannot be due at this early stage to the contraction of any adhesions between the pleura and pericardium, which have, in fact, not been in contact. For even in the later stages of pulmonary cirrhosis such upward displacements of the heart are, as has been pointed out by Dr. Mitchell Bruce, more atmospheric than cicatricial in origin.

Equally interesting points in connection with this subject are the mechanism by which the displacement to the right is produced, and the anatomical relations of the heart which admit of its production; and a glance at these rough diagrams may help to elucidate my description. We must remember that the heart is chiefly attached by its superior and right borders, at the right and upper extremity of the long cardiac axis (Bruce) corresponding for all clinical purposes to a point about midway between the 3rd costal cartilages, and that it is lying loosely in the pericardium, suspended, as it were, obliquely from this fixed point by the great vessels and deep process of the cervical fascia. It may thus be regarded as being normally displaced to the left, the attachments being mainly in the mesian line, and as being capable of greater movement to the right than towards the left.

From these facts it follows that when pressure is exerted on either side of the pericardium, sufficient to displace the heart (Fig. 5), its apex moves somewhat in the arc of a circle whose centre is this fixed point and radius, the long cardiac axis, cutting the chest wall at the base of the xiphoid cartilage, the 5th intercostal spaces on either side in the right and left parasternal lines, and a point about 1 inch outside each nipple, whereas the base may remain comparatively stationary unless the distensile force be so great as to displace the entire contents of the mediastina. The more movable heart is, however, first acted upon. Hence, in any given case, if we find the apex outside this circle, we may conclude that the basic attachments of the heart have been severely compressed, their relations altered, and that the case is fraught with extreme danger. This I observed in the foregoing case, and accounts for the impulse being above the right nipple on the 12th day at least 1 inch higher than the normal level of cardiac dulness. But besides this revolution round its basic attachments, rotation on its long axis must also occur, with the result that, if to the right, the left ventricle and auricle become anterior, while the right ventricle and right auricle are rotated into a posterior position, and lie at the back of the heart on the front wall of the posterior mediastinum.

Moreover, we find this rotation is, in a minor degree, one of the normal visible movements of the heart,[a] for, "during each succeeding systole the heart is seen to twist slightly on its long axis, so that while the base is fixed the apex moves from the left and behind towards the front and right, displaying more of the left ventricle; the cycle being completed during the diastole by the flattening of the ventricles, the heart turning back towards the left." Again, these are the positions in which the cavities are most frequently found when it is congenitally displaced to the right,[a] the auricles and ventricles occupying positions exactly the contrary of their relative ones on the left side, the apex pointing downwards and to the right.

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[a] Foster. Text-book of Physiology.

The reverse of course takes place in "sinistrocardia" from right effusions, but displacement is more limited here from the oblique suspension of the organ by nature, and rotation towards the left having thereby already occurred. Such rotation during displacement I believe accurately accounts for two peculiar signs existing in this case—viz., *more vigorous impulse* and *louder first sound* than when the heart was in its normal site, due, doubtless, to the anterior position of the left ventricle.

I can find no allusion to these signs as clinical evidences of rotation in any work on the chest, though they are very striking. Dr. Frederick Roberts,[b] however, attributes the impulse to the right ventricle. In other respects the sounds are normal. With Dr. Douglas Powell's[c] opinion that the axis of the heart can never diverge beyond the vertical line or only to a very slight extent, and that the apex does not point to the right, my observations on these cases do not coincide. The chief resistance to this displacement is that offered by the right lung and right wall of the mediastinum, but these cannot be at all considerable, since we have seen a slight amount of effusion is sufficient to overcome them, and they yield long before the intercostal muscles or diaphragm.

When, however, the right lung has become indurated from disease, or its pleura thickened or adherent, it is clear that displacement cannot occur easily, and there arises in these cases a fertile source of danger from its compression against these unyielding structures.

Under these conditions the respiration will be found very much distressed and *out of proportion to the extent of the disease, per se.*

The left pulmonary vessels would seem to have no restraining influence, for when we consider that the left lung has ere this been compressed against the spine and mediastinum, these vessels are thereby relaxed and rendered useless for the time being.

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[a] Breschet. Memoire sur l'Ectopie du Cœur. Repertoire Général d'Anatomie. Vol. II.

[b] Theory and Practice of Medicine.

[c] Disease of Lungs.

The other dangers of dexiocardia must not be forgotten. They are mainly due to twisting of the venæ cavæ, leading to thrombosis or occlusion of these thin vessels, and also I think the curvature in the right branch of the pulmonary artery, which, in this position of the heart, must be extreme, and on which the aeration of the blood now almost entirely depends.

Regarding the peculiar form of decubitus assumed in this case (half right and half dorsal), it is rare to see a patient lie so much on the healthy lung when such a large effusion exists in the opposite pleural sac, and no explanation, as far as I know, has ever been given for this strange phenomenon, although repeatedly observed in severe cases.[a] Now, careful clinical observation on this point has convinced me that—(1st) This posture is indicative of an effusion of fluid of *exceedingly high tension* into the opposite pleura, not necessarily an enormous one; and (2ndly) that by this position its tension is lessened.

So much indeed has been written on this subject that one hesitates to enter on it. However, I will mainly allude to his three symptoms.

Their explanation is, I believe, the following. When he lay over on the left side, the abdominal viscera gravitated to beneath the left ala of the diaphragm (which was distended by the effusion), exerting pressure on its under-surface, and probably causing his shoulder-pain through the cervical connections of the phrenic nerve. This upward pressure likewise *increased the tension of the fluid*, and, tending to further displace the heart, produced cardiac dyspnœa and "præcordial anxiety," compelling him in a few minutes to turn on the other side. Similarly, contact of the side with the bed when lain upon would have the same effect. Undue stress has been laid upon the so-called "weight" of the fluid on the mediastinum preventing decubitus on the sound side, as originally stated by Le Dran; for potent as this is in cases of empyo-pneumothorax where atmospheric pressure comes into play, it is impossible to conceive its action in simple effusion into the pleura, which is a shut sac, closed to the external air, where the pressure of the fluid is uniform in every direction, and incapable of increase by gravitation. Moreover, this is borne out by the experiments of M. Richerand on hydrothorax artificially produced. Now it is the *tension* of the fluid, I believe, which causes most of the trouble, and this appears to be distinctly lessened by lying on the sound side, which, by removing the abdominal viscera, allows the diaphragm to "bulge" downwards and the capacity of the affected side to be proportionally increased.

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[a] "Thus Isenflamm relates a case where a patient presenting all the usual signs of empyema lay generally on the *right* side, which, for this reason, was supposed to be the seat of the disease; accordingly the operation was performed, but no pus was found. The patient died, and on dissection it was discovered that the *left* side was the seat of the empyema. Morgagni relates a case of this kind on the authority of Valsalva; and M. Baffos records another instance." *Cf.* Stokes. Diseases of the Chest. 1837.

All possible freedom must, however, be given to the healthy lung, as pointed out by Richerand,[a] Townsend, and Chomel;[b] but in the foregoing case *the distress from increased tension so far exceeded that from embarrassed respiration* that the relief of the former became an urgent necessity, while the free expansion of the right lung was of secondary importance and had to be performed under difficulties.

Hence, it is clear that conditions indicating distress on change of posture (dyspnœa, pain, anxiety), whether arising from increase in the tension of the fluid—lying on the affected side—or interference with respiration—lying on the sound side—are exclusively produced by influences operating *outside the thorax* (position of abdominal viscera, conditions preventing free descent of diaphragm or elevation of the ribs); and hence we also find that the form of decubitus chosen by the patient is that in which the tension of the fluid is least, and in which, at the same time, the healthy lung has least interference with its free expansion. Thus, this patient lay on his *right side* as far as his abdomen and legs were concerned, but, in order to free the right lung as much as possible, endeavoured to rotate his thorax into a *dorsal* position.

Further proof of the influence of tension in determining decubitus is afforded by comparing the symptoms during the accumulation of the fluid when its tension is at its maximum and organs are being displaced, with those during absorption when the fluid is receding, and its tension reduced to a minimum, the level of the effusion being in both cases the same.

Let us take the 4th rib. We find on the 7th day, T. 101°, P. 120, R. 24. The effusion, rapidly increasing, has reached this level: he has had two attacks of fainting within the last 3 days on very slight exertion; the heart is on the right of the mesian line; his decubitus is half right and half dorsal, and in this posi-

[a] Cycl. Practical Medicine. Art. Empyema.

[b] Dictionaire de Médecine. Art. Pleurisie.

tion he is compelled to remain, every attempt to turn on the affected side being followed by shoulder-pain, dyspnœa, and anxiety. By the 22nd day the fluid has again receded to this level: T. 98°, P. 76; his respiration is easy, and he can lie and sleep in any position on either side, but *prefers the left*, as this has now become the most comfortable. The heart pulsates under the 5th left cartilage, and he has only one recurrence of fainting during the last three days.

Now, the differences in the symptoms on the above dates can, I think, be due only to alterations in the tension of the fluid, its level being identical in each case. For while it is evident that fluid cannot accumulate in the pleura until its tension exceeds the pressure of the atmosphere, it is likewise true that during absorption its tension is so far below this standard that the pressure in the affected side actually becomes negative, and if the lung cannot expand, deformity necessarily results. Furthermore, I believe that the more rapid the effusion, the higher will its tension be found, and the greater the distress produced by it; and, *vice versâ*, that the more gradual and "quiet" the effusion the less is its tension and the milder are the accompanying symptoms.

Again, since (1) *Tension* and (2) *Compensation* are the two conditions which determine a simple or serious case, and on which paracentesis will frequently depend, the symptoms indicating high tension in the fluid are of great clinical value. They will be found to be:—

1. Decubitus on the healthy lung, or difficulty in lying on the effusion.
2. Fixed or peculiar decubitus: where the patient is constrained to lie in one position.
3. Dyspnœa out of proportion to the amount of disease.
4. Where upward or lateral pressure on the affected side produces distress or dyspnœa.

The extent of dulness, estimated quantity of fluid, or displacement of the heart are no safe guides either in prognosis or treatment.

In support of these views, which, as far as I know, have not been hitherto advanced, it is satisfactory to notice that, while they clear up the difficulties heretofore enveloping this subject, and reconcile the conflicting statements of most accurate observers (each in itself correct),[a] they also explain the anomalous clinical facts that we sometimes see copious effusions in persons free from constitutional disturbance or local distress who can lie equally well on both sides; that some patients lie on the healthy and others on the affected side; that the same patient lies at different periods on each side; and finally they prove by their analogy with the notes of Dr. Finny's case that when the heart cannot be dislocated owing to the resistance of structures indurated by disease, any excessive elevation in the tension of the fluid is a potent cause of sudden death.

Of displacement of the heart to the left there seems to be less clinical experience. In a case recorded by Dr. Hayes[b] of right empyema reaching to within three inches of the clavicle, "the cardiac apex was considerably displaced to the left, and the heart sounds were weak," but there was no murmur—the feebleness being possibly dependent upon the complete seclusion of the left ventricle from left rotation. In these cases of sinistrocardia the risks of sudden death would seem to be greater than those attending right displacement, arising from pressure of the fluid on the thin walls of the venæ cavæ and right auricle—which must be extreme before the entire heart will be dislocated to the left—torsion of the cavæ as a natural consequence, and the possibility of a dangerous increase in the natural curve of the aortic arch.

Since the heart may be regarded as being normally displaced to the left in health, its axis forming with the mesian line an angle of about 40°, it is probable that few dangers attend dislocations to the right of an equal extent, but this point exceeded they are much increased. As bearing on this, syncope occurred in the foregoing case but once while the heart was within these limits and *three times* afterwards.

One other point of great interest must be noticed—viz., the pathology of the "tympanitic" (?) note under the clavicle.

From the time when Skoda, in 1839, published his theory of percussion sounds, difference of opinion has existed as to its nomenclature and significance. "*Le bruit Skodique*" of the French, or our "Skodaic resonance," is probably the least confusing, as these terms convey nothing but its peculiarity, for even "Hudson's tympany" may mislead, since Dr. Gee declares it is not "tympanitic" at all.

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[a] Thus Bichat and Roux stated that pressure upwards on the side corresponding to the effusion caused extreme distress; while Townsend and Chomel found the very reverse to be the case, upward pressure on the sound side being intolerable, while that on the affected side was borne with impunity—the former being correct in severe cases with high tension and peculiar decubitus, and the latter true in moderate effusions or during stage of absorption where the tension is low and patient lies on the affected side, and where upward pressure on the sound side will impede the action of the diaphragm.

[b] Transact. Acad. Medicine in Ireland. Vol. I. 1883.

It is the clearest and most musical "tone" or resonance yielded by the thorax, differing both from pneumothorax or emphysema. It is only noticed when the effusion is very great and during the height of its pressure, while its very sound gives one the idea of conditions of great tension underneath. In Dr. Hayes' case "*loud bronchial respiration with moist râles*" were heard over the part, but, as in my case, I take the râles as the first effort of this part of the lung to regain its function after compression, whereas the loud tubular breathing must be transmitted from elsewhere, such excessive activity here being incompatible with a perfectly placid side. Again, I found the Skodaic resonance entirely disappear when the moist crepitus of returning function became established, almost proving its dependence on compression and inactivity of the part.

Now in a healthy lung percussion produces a "*clear*" tone in the bronchi, but owing to the defective conduction of the alternate media of vesicular structure and air-sacs, it reaches the surface not as a clear, but a "muffled" resonance. Could we here interpose a more perfect conducting medium we should lose the muffling and get the bronchial tones less altered.

For the foregoing reasons I believe the pathology of this note to be: *Healthy lung, compressed against the bronchus* so tensely that it is rendered functionless, and acting as a more perfect conductor than the normal blood-vascular vesicular structure, transmits to the front of the chest the normal tracheal or bronchial percussion tones less muffled than in health, while the rough bronchial or tubular breathing is also conducted from those tubes. As the tension is withdrawn the tubular breathing becomes less, the fine moist crepitation tells us that the air is re-entering the alveoli and inflating them once more, while the peculiar percussion sound has entirely disappeared.[a]

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[a] This view is much simplified if we believe, with Wintrich and Dr. Gee, "that the minute vesicular elements of the lung and the minutest bronchiols are both singly and collectively too small to resonate, the pulmonary percussion tone being produced in the middle-sized and largest bronchia; and the vesicular or spongy structure is nothing

Since writing the above I have had the opportunity of examining this man's chest again after a lapse of 2 years. The left side has increased 1½ inches at the level of the 3rd rib, measuring now only 1 inch less than the right. At the 5th rib there is still 2 inches difference and 1½ at the xiphoid base. Hypertrophy of the right lung has transgressed the left sternal line and raised the right nipple to the upper border of the 4th rib; the left nipple has fallen to the 5th rib, but owing to the depression of the whole left side and shoulder girdle is only ½ inch further from the clavicle than the right. The apex beat is displaced upwards and to the left to half way between the parasternal and left mammary lines on the upper border of the 5th rib. This is more apparent than real—the result of the deformity.

A cyrtometric tracing at the level of the left nipple shows a considerable antero-lateral diminution in the capacity of the left side, extending from the sternum to near the angles of the rib, and averaging a depth of 12 mm. and a contraction posteriorly between the spine and these angles of 5 mm., while at the angles the left side bulges posteriorly 3 mm. beyond the outline of the hyper-distended *right* side. These discrepancies being the combined effects of left contraction and right distension can form no criteria of the extent of the former. Thus it is interesting to note that contraction of one side can *increase* its measurement in one diameter (the sterno-angular), that this diameter can exceed that in the hyper-distended side, and that it is produced by antero-posterior compression of the ribs, with protrusion of their angles.

The whole left side being considerably below the level of the

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but an inert membrane as far as concerns the production of tone." However, while admitting the subordination of the vesicular structure to the bronchi in producing tone, the dulness over pneumonia prevents one accepting this *in toto;* for then a pneumonic patch should merely conduct the bronchial percussion tones more clearly, as it does the breathing, instead of sounding dull.

Clear tones can be produced by other conditions, such as over large closed air-containing cavities with elastic walls of moderate tension, or a smaller air sac with its mouth partly open under greater tension; but these do not exist over a pleural effusion,

Other explanations are :—

"Relaxation of the pulmonary tissue" of the German writers.

Air in the minute tubes of the carnified lung—Dr. Walsh; while Dr. Bristowe attributes it to the diminished vibrating area of the thoracic walls. Dr. Goodhart, in an interesting paper on the behaviour of fluid in the chest (*B. M. J.*, June 4, 1887), takes it as an indication of generally-impaired resonance all over the affected side, produced by diminished volume of air under the part percussed, or diminished vibration of the walls of the chest. However, he admits that this diminished resonance must have some other cause besides the fluid, as this is often very small.

right, and no efforts having been made to elevate it to this level no curvature of the spine has resulted. He enjoys excellent health.

As Dr. Finny's case is a most interesting example of left pleural effusion terminating in sudden death, his kind permission enables me to briefly epitomise it here, as forming a valuable contrast to mine, and since much may be learned from their analogy:—

CASE.—A delicate lad of nineteen was seen on December 21, 1882, with a pleural effusion to the 6th rib and slight dextrocardia; intercostals healthy; decubitus generally dorsal or towards the right side, and in that position he used to take his meals; cough, muco-purulent sputum; resp. slightly over ¼ of the pulse: remittent fever from 100° to 103°, and pulse 100 to 120. The upper lobe of right lung presented signs of numerous small cavities filled with air and fluid, with comparative dulness and coarse râles, but no bronchophony—conveying the idea that the lobe was rapidly breaking down. By the 27th the fluid had reached the 4th interspace; his breathing became much worse, with diffuse pain in left side; a cardio-pleuritic friction sound was heard over the sternal ends of the 3rd interspace and 4th rib. On the 28th evening he seemed fairly well, but his breathing was difficult; he slept well, lying on his right side, but his breathing continued bad. The nurse roused him at 3 a.m. to give him nourishment, raising him up in bed to try and ease his breathing; his expression changed, indicating his end was near. He became bathed in perspiration, and although stimulants were given, his breathing still continued the same, and he died at 5 45 a.m.

Post-mortem.—The left side was almost full of fluid and the membranes covered with recent lymph. The whole of the right lung was adherent to the ribs, particularly the upper lobe, and the pleura was thickened all over the lung; its upper lobe presented remarkable fibroid changes hitherto undescribed. The lobules, though mapped out and filled with air, were separated by fibrous and cartilaginous septa. The vesicular structure was replaced by thick and dense fibrous tissue. The whole lobe was honeycombed by a series of minute labyrinthine cavities, varying in size from a pea to ½ an inch in diameter, while some were quite discrete and unconnected with bronchi.

In remarking on the sudden death of this lad Dr. Finny lays great stress on the rapidity with which the effusion is poured out, and the suddenness of the pressure on the heart, as conditions of great danger; and in attributing its fatal termination to a sudden effusion into the pleura on the night of his death, regrets he was not present to draw off the fluid, although never previously was there any indication of its necessity.

For many other most interesting notes I must refer to his original paper.

The comparison of these two cases is most instructive, and their analogy teaches us many facts which cannot be gathered from either alone. Both cases of acute left pleurisy, in lads of the same age, with very peculiar decubitus. In one the right lung was healthy, and, as the fluid increased, yielding to the displaced heart, allowed it to pulsate freely on the right side till the effusion abated; while at the same time, being functionally perfect, it fully compensated for the loss of its fellow. In the other, this lung was diseased, and although the effusion was less, and displacement of the heart slight, sudden death resulted.

Now, in addition to imperfect compensation, it seems probable that the indurated lung and thickened pleura must have here offered very considerable resistance to the displacement of the heart, so that the two vital conditions on the part of the opposite lung which admit of such dislocations being produced with safety—viz., freedom to yield and health to compensate—being seriously impaired by dense adhesions and chronic disease, whatever chances a simple case might have Dr. Finny's patient was deprived of. The heart, in fact, was fatally compressed against these unyielding structures.

The evidence in this case of the influence of high tension is very strong in that the decubitus was very striking, the breathing was very difficult, and the right lung refusing to give way, the heart was compressed into a state of asystole against it.[a]

I have now under my care a case of left pleural effusion in a feeble man of sixty-seven, complicated with acute pneumonia of the right lower lobe. The heart is heard loudest under the sternum, and the impulse—if any—is here also. The fluid reaches the 8th rib behind, but not at all in front. His breathing is fast, *but since he can lie and sleep in any posture on either side*, the tension of the fluid is low and he is recovering without paracentesis.

Figure 6 is the bedside tracing of a young lad of eighteen on the 13th day of his pleurisy, with P. 88, T. 100°, resp. 32, fluid reaching the clavicle and crossing the sternum at the 3rd rib, the heart's impulse being between the 5th and 6th ribs to the left of the right nipple line, but the maximum intensity of its first sound under the right side of the base of the xiphoid cartilage. Six days later on its return to the left side the centre of the heart was found between the 4th and 5th right cartilages, having gone up one space. In this case there was very little distress; he lay and slept on the back inclined to the affected side, but could turn well on both. There was no fainting, and "*le bruit Skodique*" was not observed—all these points showing that the tension of the fluid must have been low, although the effusion was apparently considerable. We must not forget that liquid may be held in suspension over the surface of the lung to a shallow depth unaffected by the laws of gravity; and many cases with a large area of dulness, but mild symptoms and low tension, are probably of this nature.

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[a] Hilton Fagge, alluding to sudden death in pleurisy, cites two cases, one with double pleurisy and great dyspnœa for some days previously, which he attributes to "exhaustion of the respiratory centre;" while in the other, which died after an hour's extreme dyspnœa, it was observed that the *pulse ceased before the respiration*—the latter observation seeming much nearer the truth.

In concluding this subject for the present the following facts appear sufficiently well-established to warrant their recapitulation:—

1. That displacement of the heart may occur as early as the fourth day; that a moderate effusion can produce it; and that it may be preceded and accompanied by fainting on exertion.

2. That it occurs before protrusion of the intercostals, and the heart may even pulsate beyond the right nipple while they are not affected.

3. That, owing to the peculiar basic attachments of the heart, the apex can move in the arc of a circle, right or left; that the heart appears to rotate upon its long axis; and that this rotation in dexiocardia may increase the distinctness of its sounds and impulse.

4. That the heart does not return by the same route, but on a plane somewhat higher, and that this course, whether real or apparent, is dependent upon the non-expansion of the lung.

5. That extreme displacement may exist without either *bruit* or palpitation, and does not *ipso facto* necessitate paracentesis.

6. That it is extremely dangerous for the patient to undergo any exertion when it is so displaced, owing to the many risks of sudden death.

7. That decubitus on the sound side, or in a semi-dorsal position inclined to that side, appears to lessen the tension of the fluid; that it is always a grave symptom, and an urgent indication for paracentesis to relieve tension.

8. That "*le bruit Skodique*" is caused by the compression of

healthy lung against the bronchus, thus acting as a better conductor of sound; that it is closely connected with high tension; and that it disappears when the intra-thoracic pressure falls.

9. That the dangers of displacement being intimately connected with the condition of the opposite lung, the extent of dislocation, *per se*, forms no criterion—some slight displacements ending fatally, while other extreme ones are borne with impunity.

ART. II.—*Trephining for Meningitis.*[a] By J. S. M'ARDLE, F.R.C.S.; Surgeon and Lecturer on Clinical and Operative Surgery, St. Vincent's Hospital.

IN bringing this subject under your notice, I have two objects in view. 1st, to place on record a case which I will hereafter detail; and 2nd, to elicit your opinion in reference to a line of treatment which suggests itself to me for the relief of some, at least, of the forms of meningeal inflammation. We have all seen cases of syphilitic tubercular and traumatic meningitis die, and not infrequently does a meningeal effusion terminate life in cases of alcoholism. Now, elsewhere, in areas open to surgical interference, in cases where tension is tending to a fatal result, local or general, we aim at relief of that tension by incision and free drainage, and I think the time has arrived for applying this surgical principle to the last of the closed cavities, to be handed over to the tender mercies of the surgical side of the profession. For long the physicians could not see their way to surgical intervention in cases of serous or other collection, in the peritoneum, pleura, or pericardium; but the advances of modern surgery have emboldened them, and far from in any way impeding our advance, they are the first to see the necessity for all justifiable operations on these regions.

We still linger by the cradle of brain surgery, and let us hope that with the aid of the highly skilled diagnosticians whom we now boast, we may ourselves witness the advantages of its adolescence.

The case I am about to detail is an instance in which I felt that vigorous surgical interference was demanded but would not be permitted, and you will agree with me that life might have been saved if my suggestion had been carried out.

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[a] Read before the Section of Surgery of the Royal Academy of Medicine in Ireland, on Friday, May 20, 1892. [For the discussion on this paper see page 78.]

CASE I.—James Egan, aged thirty-eight years, was crushed by a horse against the side of his stall, sustaining injuries to his chest and back. After a time he complained of severe pain in the back and right side of head, gradual loss of strength, and general mental weakness. He came under my care in the following condition on May 10th, 1890:—

He was apathetic, answered questions very slowly, and all response to questions of any kind was very tardy. His pulse was slow (50 per minute), soft, and full. Temperature subnormal, ranging from 95·6° to 97·8°, occasionally in the evening reaching 98°. From the first, emotions, if he experienced any, affected only his inner self, his blank face never bearing any evidence of their existence. He was able to move about, but his movements seemed purposeless. All through he took nourishment freely, and the urinary and digestive systems were normal.

All our efforts at relieving the distress by blistering and the exhibition of mercury proved fruitless, the patient going from bad to worse, first losing control of his legs (a condition necessitating confinement to bed), then a similar condition of the arms set in, so that he was never able to assume a desired position without aid.

The power of co-ordination was completely lost, while muscular action was not interfered with. If asked to put his hand to his head or to reach for anything, the result was painful to witness. The poor fellow would vainly endeavour to control the movements of the limb, which generally went in every direction but the proper one; and usually when the other arm was requisitioned to aid the unsteady member, a series of eccentric bimanual movements resulted—rarely, indeed, ending in the performance of the desired act. This state of things continued for some days, then deglutition and respiration became affected; and, notwithstanding all our efforts, he died on May 26th, 1890.

The *post mortem* revealed a thickening of the membranes of the upper part of the cord; and at the base of the brain, effusion under the tentorium, compressing the cerebellum and medulla, was found to be the cause of death.

Now this is a case in which there was no direct cranial injury, but nevertheless death resulted from intra-cranial pressure, and a trephine opening into the cerebellar fossa would have relieved the symptoms and probably saved life; and my suggestion is, that what we do for intra-osteal pressure elsewhere should be done in such cases whether arising as the result of tubercular, syphilitic, or other meningeal inflammation. I have examined the membranes of the brain in fatal cases of tubercular meningitis, and although the majority showed diffuse meningeal thickening, I can recall several in which only a few small, grey nodules were found, such as are discovered in cases of peritoneal tuberculosis which end favourably after irrigation. A similar result should, at least in some cases, follow interference in the cases under discussion. The case I have just related occurred in a syphilitic subject, and, no doubt, his constitutional condition at the time of the accident predisposed him to the affection from which he ultimately died; but the *post mortem* disclosed only a removable cause, and one which, but that my hands were tied, would have been removed, and very probably with success.

The next case which I am about to relate comes within the category of inflammatory troubles, although some would say that it was one of subdural hæmorrhage.

CASE II.—William Green, aged forty, was admitted to Saint Vincent's Hospital on the 3rd December, 1890, when the following history was elicited:—On Saturday, November 15th, he fell into the hold of a vessel, striking the left side of his head; he was removed in an unconscious condition to Sir Patrick Dun's Hospital, where a wound over the left eye was dressed. In a few hours consciousness returned, and he went home the same evening. The next day being Sunday, he rested, and on Monday resumed his work as coalporter. All went well with him until Monday, December 1st, when he felt disinclined for work, had some sickness of stomach, and noticed his left hand weak. During the evening of that day he experienced severe pain in the top of his head, and the weakness of the arm increased. On Tuesday, sixteen days after the accident, he found the left leg becoming powerless, and the following day he came under my care. He then had partial paralysis of left arm and leg. There was a scar over the left eye; pulse, 54; temperature, 96·5°; pupils normal, and respond to light. Although he seemed stupid he answered quickly and accurately. I had his head shaved, and the most careful examination did not disclose any external evidence of injury on the right side. It was evident from the slow pulse and sub-normal temperature, as well as the paralysis, that compression of the brain was present.

The history (early unconsciousness, then an interval, and now rather rapid occurrence of paralysis) pointed to secondary hæmorrhage; but the fact that pressure symptoms so gradually increased convinced me that, although a hæmorrhage might be the primary cause, inflammatory trouble must have supervened. Ice was applied to head, and mercury administered; but the symptoms grew worse, until, on the morning of the 5th (fifty hours after admission), the following note was sent to me by Dr. Garret Hickey, to whose able assistance are due many of my successes, both in private and in hospital practice:—

"Dec. 5th—Green slept pretty well during the night; but at 6 a.m. I was called, to find that he had just had a convulsive attack, which weakened him very much. At 7 20, I saw him again, and learned that in the interval he had had several, only 5 to 10 minutes elapsing between each." The attack which caused him to send an urgent message for me he describes as follows:—"The fingers of the left hand contract firmly into palm. The hand is then flexed on the forearm; pronation then takes place while the arm is being elevated straight up from the body. About this time deviation of the eyes to the right occurs, and the face soon follows in the same direction, contraction of left face being marked (for the first time gurgling in the throat and difficulty of breathing are noticed); the arm now drops, not suddenly, but by short jerks, and the left leg works convulsively." He winds up this hurried, but accurate and expressive note by saying, "I would wish you to come as soon as possible. He is perspiring freely, and is much exhausted after the exertion." I hurried to the hospital, saw a repetition of the performance, so well described by Mr. Hickey, and a picture of greater distress I never witnessed. Fortunately, the patient was totally unconscious, and had been so for some time. The temperature was still subnormal, and the pulse varied from 45 to 50 per minute. In the last attack which I witnessed, and the last we allowed him to get, respiratory difficulty was very pronounced, the poor fellow becoming cyanosed. I felt that further delay would be criminal. Removing him to the theatre, I at once removed the piece of bone exhibited (Fig. 1.) The dura mater projected into the wound, looking very dark. On incising it, a greenish, serous fluid gushed out, and on raising the membrane, after detaching it three-fourths of the way round, I found a clot adhering firmly to its inner surface. This

I scraped away. After thoroughly irrigating the parts with boracic solution, I sutured the dura mater, laid a medium sized drainage-tube across the wound, passing deep sutures to fix the scalp flap. For some time there was a copious serous oozing, which necessitated frequent change of the dressings; but late in the evening drainage seemed complete, and at 3 a.m. on the 6th, consciousness returned, the patient raising at the same time the arm which had been paralysed, and saying to the nurse in charge, "Begor, I've the use of myself, ma'am."

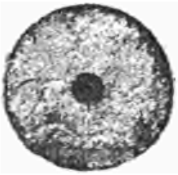

Fig. 1.

From this time recovery was uninterrupted, and on the 14th, that is, eight days after operation, the patient was about, the wound being soundly healed. The ultimate result of the operation you have witnessed. The patient you have examined has never lost one day's work through ill health since his dismissal from our convalescent home, one month after operation.

In determining the position at which to apply the trephine, I was guided chiefly by the starting point of the spasms, and I cut down in the area which gave me the greatest chance of reaching the hand and arm centres, as the convulsive seizures started in these centres, and spread to those of the face downwards, and to those of the leg upwards.

Fig. 2 shows the exact situation in which I trephined, as you may see by comparing the plate with the patient's head. Now this was the exact spot at which an adherent clot was found, and when we come to study the next plate, Fig. 3, we find that this area corresponds exactly with the supposed situation of the hand and arm centres, and one can easily explain the course of the case from gradual loss of power of the hand and arm to a loss of power of the lower extremity, and ultimately to a complete left-sided paralysis. Extension forwards of the pressure would explain the conjugate deviation of the eyes towards the side of the lesion, and extension backwards would account for loss of sensation and of consciousness.

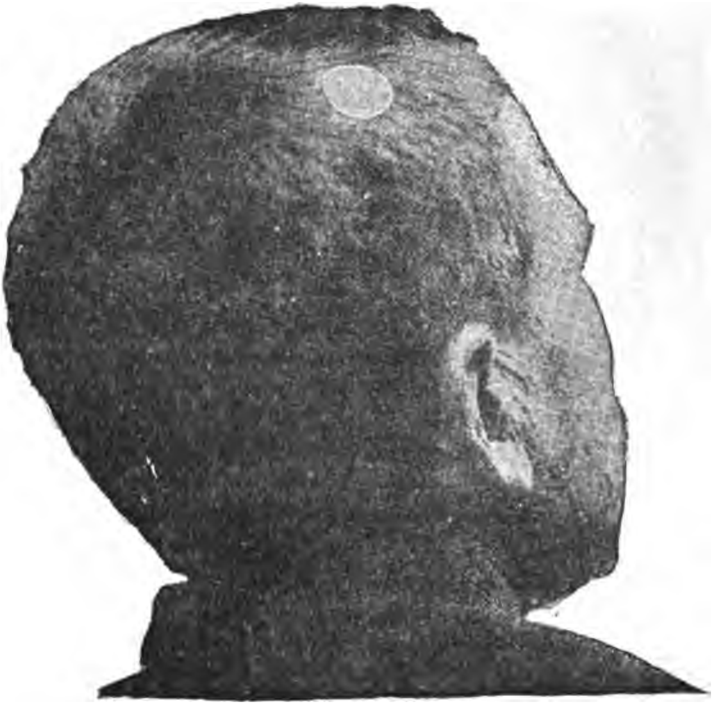

FIG. 2.

In this case a small blood clot was, no doubt, the starting-point of the trouble, but a localised meningitis was the condition for which, after consultation with my colleagues, I trephined this man. The operation confirmed the diagnosis, and the result which you have witnessed fully justified the undertaking. Before operation I was careful to mark the line of Rolando's fissure, but when the patient was anæsthetised and brought into the theatre, I did not like the direction of the line marking the fissure, and on re-measuring the fronto-occipital line I found that on the previous occasion I had placed the upper end of that line half an inch too far forward, as in the first marking I had commenced the measurement by placing on the tape (*vide* Fig. 4) at the root of the nose, and thus in subdividing the distance a

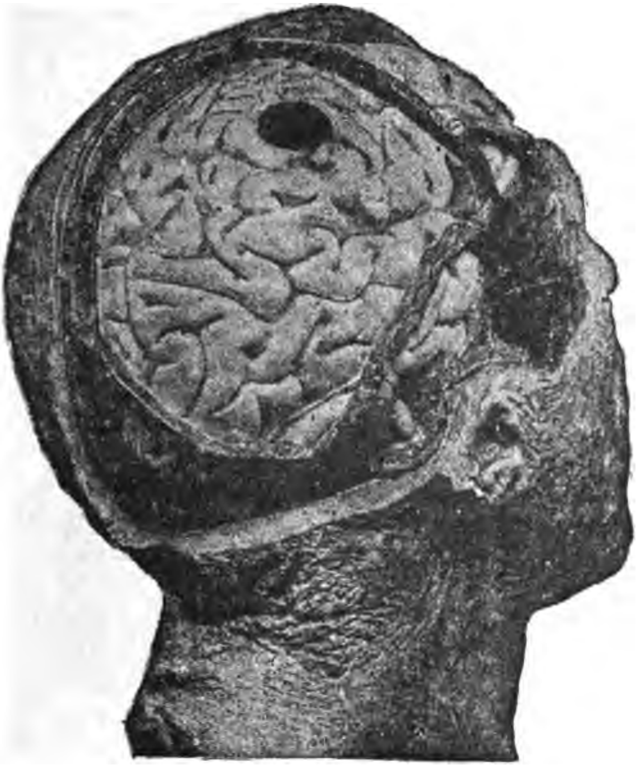

Fig. 3.

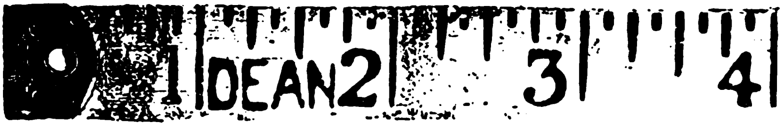

Fig. 4.

difference of half an inch occurred. Now, as the clot removed was adherent to the dura, a faulty marking might have led to less favourable ending. I merely mention this error, as it is possible others could fall into a similar one, and the warning may be of service. During the operation, Mr. Patteson, who had charge of the patient, called my attention to a curious effect of the working of the trephine, the explanation of which I would be glad to elicit. Before operation and during the intervals occupied in examining the depth of the trephine wound, the pulse never was above 54 per minute. The moment I exerted pressure the pulse went up to 80, and this change occurred on every similar occasion all through the operation.

Before definite symptoms of meningitis showed in this case my notion was that secondary effusion of blood occurred during some effort at lifting heavy weights, and I was deliberating over which of the hæmorrhagic areas described by Kronlein, and depicted in the accompanying woodcut, Fig. 5, it would be advisable to trephine should no improvement take place.

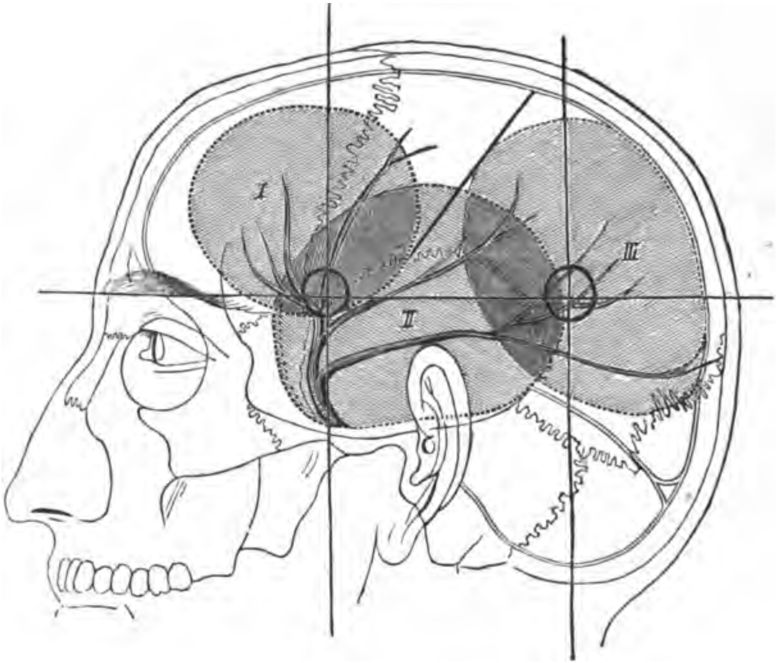

Fig. 5.

That in perforating the skull in the situations selected one strikes important meningeal branches is shown by the pieces here depicted—Fig. 6—which I removed by a trephine of

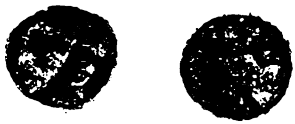

Fig. 6.

only 8 mms.—one comes on the anterior, the other on the posterior division of the middle meningeal artery. In the absence of definite focal symptoms, and with symptoms of meningeal hæmorrhage, I would be inclined to adopt Kronlein's suggestion and seek the clot in either of the positions marked out, as a trephine of 16 or 20 mm. would expose with certainty clots or effusions of any size if applied at the points indicated.

As the diagram is instructive I take the liberty of laying it before the Academy, in the hope that some members more versed in the anatomy of the cranium than I am may express an opinion on its merits or demerits as a guide in operations on that part.

The points of the case I desire to recall are—1st, there was unconsciousness immediately after the accident lasting some hours; 2nd, there was no trace of injury to the right side of the scalp; 3rd, there was evidence of a wound over the left eye; 4th, the patient worked at a laborious occupation for well-nigh three weeks after the injury; 5th, death was imminent from laryngeal spasm immediately before operation; 6th, serum, not blood, was the immediate cause of pressure symptoms; and 7th, the membranes were thickened and showed that meningitis had been set up.

Some years ago, when the question of surgical treatment of intra-cranial hæmorrhage was so ably stated here, the term "trephining-epidemic" and such epithets were used, reminding one of similar expressions regarding operations on the abdomen when the surgery of that cavity was forging ahead in spite of every obstacle. To no chapter in the history of our art can the student of surgery turn with greater pleasure than to that on the modern surgery of the brain, and none can he peruse with greater profit; and I may be forgiven if I say that I am proud that the impress of Irish surgery is there indelibly stamped, and that by members of this Section of the Academy. Feeling that I only add a brief and halting record to this glorious page, I can but crave your pardon for thus occupying your time and to such slight purpose.

ART. III.—*The Desirability of Operative Interference in Suspected Perforation of Chronic Ulcer of the Stomach.*[a] By ALFRED R. PARSONS, M.B. (Univ. Dubl.); late House Surgeon in Sir P. Dun's Hospital.

PATHOLOGICAL observation and experimental investigation, particularly the latter, have done much to aid clinical diagnosis, and to render feasible operations which seemed little short of impious to our forefathers. The physician can often, from the clinical history and symptoms, now localise a cerebral abscess with sufficient certainty to justify a surgeon in applying his trephine and attempting to drain it. A clearer knowledge of the origin and functions of the spinal nerves has enabled the neurologist to point accurately to a certain level as the seat of spinal pressure, and the surgeon's knife has confirmed the accuracy of the diagnosis, and by the removal of the tumour made life a pleasure where it had been full of pain. Certain symptoms and signs referable to one hypochondriac region, and the presence in the urine of a small quantity of caseous pus, containing tubercle bacilli, justify, with certain restrictions, a recommendation of surgical interference, and the excision of a kidney with a localised tubercular focus has saved an otherwise forfeited life. Opening the peritoneal cavity demanded at one time no less an atonement than the life of its possessor; but to-day the surgeon, strong in his antiseptic precautions, does an exploratory laparotomy with greater coolness and confidence than he can find in the administration of chloroform to a child. But though much has been done in the past, and many lives have been saved by the combined action of physician and surgeon, much still remains to be done, and I trust that the day is not far distant when the man who dallies with acute perforative peritonitis will be equally guilty with the practitioner who follows the hounds knowing a patient of his is suffering from a strangulated hernia, and then calls in some one else to share the responsibility with him. To one of the causes of acute perforative peritonitis—namely, chronic ulcer of the stomach—I desire in this paper to refer; and I would wish, from my very limited experience, to attempt to deduce the phenomena which indicate the occurrence of perforation, and then suggest what seems to be the only line of treatment offering any hope of success. The following cases came under my notice last year, as House Surgeon in Sir P. Dun's Hospital, and my best thanks are due to the staff of the hospital for permission to record them, and for the assistance they gave me in looking up the literature bearing on this subject:—

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[a] Read before the Section of Medicine in the Royal Academy of Medicine in Ireland, on Friday, May 6, 1892. [For the discussion on this paper see page 76.]

Case I.—Michael C., aged twenty-seven, a well-built, muscular man, was brought to hospital about 9 a.m. on Saturday, 28th March, in an almost unconscious condition. The history we obtained from his friends was, that he had been engaged at his usual work, and apparently in perfect health, till 12 noon on the previous day, when he was seized with violent abdominal pain, which doubled him in two. He went to bed, and as the pain did not subside, medical aid was called in. The doctor who saw him administered castor-oil and opium by the mouth, applied stupes to the abdomen, and gave an enema. His relatives were advised to have him moved to hospital the following morning, if there were not a decided improvement in his condition. During the afternoon he vomited some reddish-coloured fluid, which was thought to be blood. He passed rather a sleepless night, suffering considerable pain, but was able the following morning to assist in dressing himself, preparatory to removal to hospital. On admission he was cyanosed, pupils were dilated, sweating on forehead, pulse almost imperceptible, abdomen somewhat distended and very tympanitic. *Complete loss of liver dulness.* It soon became impossible to feel the pulse at the wrist, and within fifteen minutes after admission respiration had ceased. In this case the physical signs, combined with the history, left little doubt that we were dealing with a perforation, and the diagnosis of acute peritonitis due to perforating ulcer of the stomach was almost quite accurate. At the *post-mortem* examination we found recent acute generalised peritonitis, evidently produced by the rupture of a small round ulcer situated just at the commencement of the duodenum. The other organs, as far as they were examined, appeared quite free from disease.

Case II.—Miss M. G., aged twenty-one, was admitted to Sir P. Dun's Hospital about 10 30 p.m. on Saturday, the 28th November, 1891, suffering from intense abdominal pain. She told us that her general health, with the exception of occasional attacks of constipation, accompanied by pain, had been good till the onset of her present illness. She gave no account of vomiting blood or of pain after taking food. The history of her illness dated from Thursday, 25th November, though since the previous Sunday there had been no motion of the bowels, and she had had slight attacks of pain referred to the abdomen. These attacks, however, were not sufficiently severe to have prevented her from attending to her daily work. On Thursday, at 8 p.m., just two days before her admission to hospital, she was seized suddenly with an attack of violent abdominal pain, accompanied by vomiting. On the next day, as the pain was still very severe and the vomiting continued, the family physician was called in. He administered soap and water enemata, and glycerine enemata, but failed to move the bowels. A dose of castor-oil, which was not vomited, was likewise ineffective. On the following day (Saturday) Dr. Ball was asked to see the patient in consultation. He visited her in the afternoon and recommended her immediate removal to hospital. On admission some four hours later the patient, who was well nourished and developed, appeared to be suffering considerable pain. The cheeks were of a bluish red hue, but the lips, conjunctivæ, and gums were rather anæmic. The tongue was coated with white fur, and the breath was fœtid. Respirations were hurried (45 per minute), and the alæ nasi were working actively. The frequency of the pulse was likewise considerably increased—132 per minute, small in volume and feeble. Her heart and lungs showed no indication of organic disease. The temperature was 96° F. The abdomen was considerably distended, though not uniformly tympanitic; it was tender to the touch, but the pain was, of anything, referred rather to the left than to the right side. The area of hepatic dulness was reduced to about two fingers' breadth. After consultation it was decided to postpone operative measures till the following morning, in the hope that the patient would then have recovered from the shock consequent on moving her, and that the advantage of operating in daylight would more than counterbalance any risk attendant on a delay of 9 or 10 hours. She had some morphin during the night, and the following morning, though her condition was very critical, it seemed that an operation would afford her the only chance of recovery. It was thought probable, from the history of the case, and particularly from the fact that the perforation—if perforation it were—must have occurred some 56 or 60 hours previously, that the lesion was connected with the vermiform appendix. The abdomen was therefore opened in the middle line, between the umbilicus and symphysis pubis. All the indications of recent acute peritonitis were present, but a careful examination of the vermiform appendix and pelvic viscera failed to disclose the cause. Dr. Ball then proceeded to explore the upper part of the abdomen, but finding the transverse colon perfectly free from any inflammation, concluded that the source of the mischief could not lie in that direction. The cavity was accordingly flushed out with warm water, and a drainage tube was inserted. The patient died that evening at 6 o'clock. A *post-mortem* examination disclosed the presence of a perforating ulcer, situated about the middle of the anterior wall of the stomach. One of the most unusual features in this case is the length she survived the perforation. Hilton Fagge says that if the patient live more than one day after the onset of perforative peritonitis, the probabilities point strongly to a perforation of the vermiform appendix, as nearly all the cases of ruptured ulcer of the stomach are fatal in less than 24 hours.

Case III.—About 9 15 a.m. on Monday, 21st December, 1891, I was asked to see a lady who had been a patient in the hospital on three or four occasions during the years 1890 and 1891, suffering from attacks of severe pain referred to the stomach. These attacks were not very closely related to meal times, as they occurred sometimes before, sometimes after, and often quite independently of partaking of food. She never vomited any blood. Consequently, though gastric ulcer, amongst other possible diagnoses, presented itself to the minds of those under whose care she was, I am not aware that any absolute diagnosis had been made in her case. These attacks of pain had often been greatly relieved by taking 10 grs. of antipyrin. I heard she had returned from her professional duties only the previous evening, and learned from herself that, four days previously, an attack of pain more severe than usual had set in. Though she continued at her work she was, owing to the severity of the pain, able to take but little food during this period. She returned to town on Sunday evening, but could not sleep till 6 o'clock the following morning. She slept then for some two hours, and awoke a little after 8 in most violent pain. I was accordingly asked to see her, and found her about 9 30 a.m. still suffering considerably. She referred the pain chiefly to the left hypochondriac region. The pulse was 100 per minute, respirations were tolerably deep. An examination of the region to which the pain was referred failed to detect anything abnormal. On auscultation the heart sounds seemed unaccountably feeble. I regret to say that I failed to recognise the nature of this case at once, because I did not grasp the fact that she had had a sudden onset of very violent pain at 8 a.m., and I understood from her that the pain was not quite so bad as it had been a little previously. I recommended the application of stupes to the side, and administered a small quantity of a stimulating carminative mixture. However, on thinking over the case it struck me that very probably it was a perforation that had taken place, and I was confirmed in this opinion when I saw her an hour or so later; for at 11 a.m. the collapse was much more marked, the frequency of the pulse had increased to 110, finger nails were blue, face was drawn and anxious, and notwithstanding application of stupes and hot bottles patient was rather cold. Dr. Finny saw her shortly afterwards, and it was decided to remove her to hospital. A hypodermic of morphin and a stimulating enema were administered by his directions, and soon after her admission she rallied considerably, but the frequency of her pulse had increased to 120. On examination the area of hepatic dulness was found to be diminished, and the note over the hepatic region abnormally tympanitic. A catheter was passed and several ounces of urine free from albumen and indican were drawn off. A soap and water enema removed a small quantity of fæcal matter. By Dr. Finny's order a consultation of the staff to decide on the advisableness of operative measures was summoned for 4. By this time the pulse had increased somewhat more in frequency, but otherwise there was no marked change in her condition. After consultation it was decided to open the abdomen. Dr. Ball made the incision in the middle line above the umbilicus, and the moment the peritoneum was incised an escape of gas confirmed the diagnosis of a perforation, the site of which was found to be the anterior wall of the stomach, in its lesser curvature near its junction with the œsophagus.

The wall of the stomach all round the perforation was thickened, swollen, and so soft that sutures at once cut through it. The external circumference of the stomach at this part appeared to be so small that no hope could be entertained of excising the ulcer completely without leaving too great a constriction. Nothing could, therefore, be done except, by means of sutures passed through the healthy tissue, to draw the stomach up to the edge of the abdominal wound and carefully stitch them together. The peritoneal cavity was then washed out, and the lower part of the abdominal incision closed, leaving a gastric fistula. After the operation the pain in the abdomen ceased, she vomited only seldom, suffered little inconvenience from the wound beyond that due to a very profuse flow of highly acid gastric secretion, which irritated the skin for some distance round it, and may in some degree be answerable for the fatal issue.

Into the further details of this case it is not necessary to enter. Suffice it to say that she rallied well, and continued to improve till Wednesday, when a change for the worse set in, and she gradually sank till death occurred at 5 50 on Sunday morning—just six days after the perforation had taken place. A more unfavourable site for a perforating gastric ulcer can scarcely be imagined. Had it been more fortunately situated, the diseased tissue could have been easily excised, the opening closed with Lembert's suture, and the stomach returned to the abdominal cavity.

From these cases we may, I think, draw the more usual symptoms of perforation. In only one case was the previous history of any assistance to us in arriving at a diagnosis; while the other two presented no symptoms before their illness which could have aroused our suspicions of an internal ulcerative process. In diagnosticating a perforation of the stomach, we have to rely mainly on the sudden onset of very violent pain, often described by the patient as doubling him in two, the accompanying collapse, pallor, and anxious expression of the face, a pulse small in volume, compressible and steadily increasing in frequency; vomiting is also often, though not invariably, present; and the respiration will probably be rapid, chiefly thoracic, and productive of pain on deep inspiration. If we see the patient a few hours later, the severity of the pain may be slightly abated, the collapse not quite so marked, and the colour improved, but the frequency of the pulse has increased from 90 or 100 to 110 or 120, with probably diminished volume and augmented compressibility. Visiting our patient some hours later—say 12 or 14 after the perforation has taken place—he expresses himself as much better; he has no longer the intense pain from which he suffered earlier in the day; there is no impairment whatever of his intellectual faculties; but, on the contrary, he is quite clear and collected, and looks to you to confirm the favourable opinion he has formed of his own condition. But, as you take his clammy hand in yours, and try to count the pulse, now barely perceptible at the wrist, as you feel the cold extremities, and see the sweat gathering on the pallid countenance, you read the words "No hope!" written clearly on every feature. The prognosis is soon equally evident to the untrained eye. Restlessness comes on, slight delirium sets in, the pulse can no longer be felt, respiration becomes quick, shallow, irregular, slow, and finally ceases, in the majority of cases, in from 12 to 24 hours after the perforation took place.

Such I take to be a fairly typical history of a case of perforative peritonitis, whether it be left to nature or treated as such cases are generally treated. And we have now to ascertain what light does the *post-mortem* examination afford us? is the pathological condition, if persistent, necessarily followed by this sudden change from apparent health to death? and, if so, are there no means by which this condition can be removed or modified? At the autopsy we find a body well developed, well nourished; on external inspection disclosing nothing except, possibly, some slight distension of the abdomen; the brain and its membranes are apparently perfectly healthy; detailed examination of the thoracic viscera discloses no disease; in the abdomen nothing morbid, except an acute diffuse peritonitis, evidently owing its origin to an extravasation of the contents of the stomach through a perforation in its wall. Must we not, as we stand by the opened body on the *post-mortem* table, feel humiliated that lesions such as these, situated not in the pons, medulla, internal capsule, heart, or any other region sacred against the intrusion of the surgeon's knife, but in the stomach—an organ which in man has been incised frequently, partly excised, and in the lower animals completely removed with success—should have been the cause of death? In this the age of gastrectomies, gastrostomies, gastro-enterostomies, pylorectomies, are these specimens not a reproach to our diagnostic skill, or operative courage? And must that reproach not grow deeper as we gaze upon the well-built body, not emaciated by prolonged fever or mal-nutrition, and examine the remaining viscera, not affected by any trace of disease, and fail to find in all anything but that small ulcer inconsistent with a prolonged and vigorous life?

But, it may be asked, is death, in the absence of operative measures, a necessary consequence to general peritonitis produced by the rupture of a gastric ulcer? To this I may briefly reply—Death is, in such cases, practically speaking, an inevitable result. I have examined carefully the literature of this subject, and can find recorded only 9 cases which presented symptoms indicative of a perforation of a gastric ulcer and recovered. Of these, 3 died subsequently from this affection, but in only one of them did the *post-mortem* examination seem to confirm the original diagnosis. This case is reported by Hughes, Ray, and Hilton in "Guy's Hospital Reports" for 1846:—"A servant girl was suddenly seized with all the symptoms of perforation. Fortunately she had eaten nothing for four hours before this, and then only gruel. She was put under the influence of opium, was kept in the recumbent posture, and was fed by the rectum. She was discharged apparently cured after 52 days. Two months afterwards she was again suddenly seized with the same symptoms, and she died in four hours. The autopsy showed, in addition to a recent peritonitis, evidence of old peritonitis. There were adhesions of the coils of intestines with each other, and between the stomach and adjacent viscera. In the stomach were found a cicatrix and two open ulcers, one of which had perforated."

Such a record out of the many fatal cases of gastric ulcer which have been reported fully justifies Mr. Treves when he says, "The lover of the curious will search long before he can find in the literature of perforative peritonitis the account of a well-authenticated recovery without operative interference;" and gives, for all practical purposes, a direct negative to the inquiry in such cases—Is there any hope?

If the prognosis, then, in these cases when left to nature or as usually treated be hopeless, can we do nothing when called to a patient presenting the symptoms I have enumerated? It seems to me that our duty under such circumstances is threefold:—1. To avoid increasing the mischief already done. Consequently all food, medicine, and stimulants by the mouth should be strictly prohibited. 2. To relieve the agony which the patient is suffering by a hypodermic of morphin, and to combat the collapse by the administration of stimulants per rectum 3. To recognise *early* that the case before us is one imperatively demanding immediate operative interference. This appears to me, under such circumstances, to be the highest function of the physician's art, and while sometimes the diagnosis may be quite evident, in others it requires great care to form, and courage to express, such an opinion. It is not to be expected that a physician should, as it were, see through the abdominal wall and accurately describe the nature and seat of the lesion; but ought he not to recognise that he has to do with some urgent intra-abdominal lesion imperilling his patient's life, and probably connected with the rupture of a hollow viscus, and that the only way in which the diagnosis can be completed and the patient's life saved is by an exploratory laparotomy? But the sceptic will probably ask, what has an abdominal section ever done for perforative peritonitis due to rupture of a gastric ulcer? I regret I can only point to a life prolonged a few days and to a less painful death in the cases I record in this paper; and I am free to admit that I have searched the literature of this question without finding one successful case. The explanation of this, I believe, is not far to seek. But first let me briefly mention what has been done in conditions somewhat resembling those under consideration.

In "St. Bartholomew's Hospital Reports" for 1873, Mr. Thomas Smith gives an account of several cases of general peritonitis consequent on rupture of an ovarian cyst in which he operated successfully. Professor Kocher did a laparotomy three hours after the receipt of a pistol-shot wound of the stomach, closed it with sutures, and the patient recovered completely. Dr. Ball's successful case of a boy, who received a stab in the abdominal wall penetrating the stomach, in which, four hours after the injury, he did a laparotomy, and stitched the edges of the wound together, will be in the recollection of some members of the Section. In a paper read before the Medico-Chirurgical Society of London in

1885, Mr. Treves described a case of acute general purulent peritonitis due to the bursting of a pelvic abscess into the abdominal cavity, in which he opened the abdomen, flushed out the cavity, and put in a drainage-tube with the most satisfactory results. Several cases of successful laparotomies for general peritonitis secondary to perforation of the vermiform appendix have been recorded; and lastly, from Dr. J. W. Moore's recent work on the "Continued and Eruptive Fevers," I learn that of 19 attempted laparotomies for perforation in typhoid fever, 4 were successful. Handicapped as the operators in these latter cases must have been by extensive ulceration and inflammation of the intestine, by high fever—by, in fact, almost every condition that could militate against satisfactory union—such results were brilliant. Why have the cases of gastric perforation in the past not been equally successful? Chiefly because they have been done too late. They have been, in many cases, I fear, postponed hour by hour till the diagnosis was absolutely certain, and the patient almost moribund, lest it might be said, "The abdomen was opened and nothing found;" while in typhoid fever the onset of peritonitic symptoms was more or less expected, and no time was lost in deciding as to the advisableness of operating.

Two courses are open to us in treating cases of suspected perforation. We may reject operative interference, take our stand on the traditions hallowed by time and authority, and follow Heister, who, writing in 1739 on perforation of the bowel, could only advise that the patient be kept quiet, that he be urged to eat abstemiously, and to lie upon his belly, and that the rest be left to Divine Providence and the strength of the constitution; or, mindful of the recent great advances in abdominal surgery, of the very slight risk attending an exploratory laparotomy, of the fatal consequences of a perforation when left alone, we may make up our minds EARLY that the case calls for an abdominal section.

In 1881 Dr. Marion Sims, when addressing a medical society in America, having described the sudden death of an eminent physician in six hours from intestinal perforation, and recommended opening the abdomen and stitching up the wound, said—"Rest assured that the day will come, and it is not far off, when an accurate diagnosis in such cases, followed by prompt action, will save life that must otherwise quickly ebb away." If that day is hastened in any degree by any statements I have made in this paper—if I have persuaded any of my audience to add acute perforative peritonitis to the generally-admitted four great surgical emergencies requiring immediate operative interference, my object in writing this paper is gained.

Mr. President and Gentlemen, I must apologise for the trial to which I have subjected you with these rambling thoughts and quotations, and express my gratitude to you for the patience with which you have listened to me. The matter and manner of the communication are far from what I would wish them to be. The only excuse I can offer is, that as I stood by the bedside of some of these patients, and saw the vital tide fast ebbing away, if one thought were impressed upon me more than another it was, "To save such cases one must open the abdomen and open it EARLY."

ART. IV.—*Notes on Epidemic Influenza*, 1891–92. By E. MACDOWEL COSGRAVE, M.D., F.R.C.P.I.; Physician to Whitworth Hospital, Drumcondra, and Cork-street Fever Hospital; Professor of Biology, Royal College of Surgeons.

THE epidemic of influenza in 1891–92 presented several peculiarities not observed in 1889–90 or 1890–91. The outbreak was more sudden and widespread, the catarrhal symptoms more wanting, and the cases ran an acuter course, whether ending in recovery or death.

Having met with a large number of cases which ran their course unmasked by complications, I have noted down some of the points which appeared of most interest, as a slight contribution to the history of the epidemic.

The cases occurred practically in the course of four months—November and December, 1891, and January and February, 1892—but the epidemic virulence lasted only some two months. Cases were sporadic in November, but a pandemic outburst occurred in the second week in December, the decline of intensity and return to sporadic cases taking place in the second week in February.

The lengthened period of time during which sporadic cases occurred harmonises with the opinion I have long held, that infection in influenza epidemics is confined to an area of epidemic influence, which includes the district in which the epidemic is active and a more or less extended zone outside it—that is to say, that although epidemic influenza spreads by contagion, the contagion is chiefly active in, or close to, the area of marked epidemic influence, so that whilst an infected person going to a district well outside the zone of the epidemic is unlikely to establish the disease, an infected person going to a district close to that already affected is likely to prove a fresh centre of infection. The course of the epidemic across the Continent of Europe to England and to Ireland, so very slow compared with the transit of passengers and goods, is thus reconciled with the fact of its contagiousness—two characteristics which, at first sight, appear inconsistent.

This can be illustrated by two typical cases. The first case I saw in November. He was a boarder in a large school and came into Dublin to spend a half-holiday with some friends. As he complained of pains and shivered over the fire, I was asked to see him, and, recognising what he was suffering from, recommended that he should be kept in town. He did not return to school for two weeks. There was no outbreak in the school, and the disease was not communicated to anyone in the house he stayed in.

The second case, or rather series of cases, occurred in the second week in December, when the epidemic influence was fully developed, and were partly in the house where the former case had been nursed. A young lady was taken ill with influenza on the 9th; a friend who had helped to nurse the former case was spending the day with her and developed it on the 11th; a married sister nursed her and got it on the 15th; the parents of the young lady and a servant also took it, as did the husband of the married sister, and a visitor staying in the house. Eight people developed it in this series, the average period of incubation being two days.

These cases are only given as types. Amongst the cases observed before the second week in December there seemed no tendency to spread; once the epidemic was established, when a case occurred it appeared almost certain to spread. The pandemic area and the sporadic area may be compared to the shadow and penumbra.

The class affected by the epidemic is a point of great interest. Those who lived in overcrowded dwellings, and suffered from exposure and want of food, seemed less likely to be affected than the well-to-do classes; and those comfortably off, but living in small houses, seemed to be not as much affected as the richer classes.

Amongst the predisposing causes great fatigue seemed the most potent. I noticed this in my own case and in the case of other medical men, who attended numerous cases day after day with apparent impunity, but suddenly developed symptoms of the disease from 12 to 24 hours after a specially fatiguing day's work.

There were two classes of cases running respectively a course of 3–4 days and 7–8 days. This is similar to what is seen in other fevers—the third week that typhus sometimes runs, the fourth and subsequent weeks' illness so frequent in enteric fever.

There were five chief prominent symptoms amongst my uncomplicated cases; sometimes they occurred singly, but generally two or more were present. Only the cases in which they were well marked are counted.

1. Bronchial catarrh. This was the most frequent, being prominent in 62 per cent. of my cases. Sometimes it was accompanied by distressing bronchorrhœa, sometimes by a medium or slight amount of viscid, tenacious mucus; in no case was it "dry."

2. Gastro-intestinal symptoms were prominent in 52 per cent. These generally developed very rapidly, vomiting and purging occurring within an hour of the first onset; vomiting was more frequent than diarrhœa. This symptom generally lasted for the 3–4 or 7–8 days, and for some time afterward there was a sensation when coughing of impending emesis.

3. Rheumatoid pains occurred in 50 per cent., generally in the back (all down the spine and extending bilaterally), sometimes only in the legs, in which case they were accompanied with great weakness of the knee and ankle.

4. Headache was a marked feature in 25 per cent.; it generally occurred in the gastric cases.

5. Urinary symptoms were prominent in 4 per cent.

In 19 per cent. of my cases no symptom except the fever was prominent; in 31 per cent. there were only fever and bronchial catarrh.

Slow recovery to strength was a marked feature of the disease.

None of the cases ended fatally; indeed, I was fortunate enough not to lose any of my complicated cases.

The treatment adopted may be briefly summarised:—

1. In cases where the increased temperature was the prominent symptom, diaphoretics were given. These generally gave relief, and, I believe, shortened the attack.

2. When the rheumatoid pains were severe, salicylate of sodium was given, antipyrin being added if the pain was excessive; when there was headache in addition these were combined with citrate of caffein. The relative proportions usually prescribed were:—

℞. Salicylate of sodium, 1 drachm;
Antipyrin, 20 grains;
Granular effervescing citrate of caffein, 1 ounce.

A fourth part to be taken three times during the day, and the fourth part on the following morning.

This always gave relief; sometimes the relief was almost immediate. If the pains returned a renewal of the mixture generally dispelled them finally.

3. In gastro-intestinal cases, hot milk and soda-water every three hours was relied on; if there was headache, citrate of caffein was given.

In no case did I consider it necessary to give alcoholic stimulants (although the onset of the disease was often marked by extreme weakness of the circulation), and I found the high temperature did not last so long, and that the fall below normal, so marked and sometimes so long continued when alcohol is administered, was escaped. There was consequently not the same depression of spirits during early convalescence, and a healthy appetite soon returned.

TREATMENT OF TUBERCULOSIS BY IODOFORM INUNCTIONS.

DR. LAWRENCE F. FLICK, after a year's experience, reports (*Medical News of Philadelphia*, 12th March, 1892):—"Iodoform will cure tuberculosis in the first stage, and it acts better when administered by inunctions than when given by the mouth. When the disease has advanced to the second or third stage iodoform may do good, but can no longer be depended upon as a curative agent. As I stated in my former paper, creasote should then be given together with iodoform, and given in large doses. If given diluted with hot water, as much as fifteen drops can be taken with comfort. It seems to me, indeed, that creasote is the drug to be relied upon in the second and third stages of the disease. I, however, use the iodoform inunctions in this stage for the reason that the tuberculous nodules in a given case do not all break down at the same time, and that whilst some nodules may be broken down, or have already broken down, there may be many that are still in the first stage. Along with specific treatment I always use tonics and forced nutrition. Much of the success that I ascribe to specific treatment may of course be due to the tonic and nutrient treatment, but I am bound to say that my results with iodoform inunctions and creasote together with tonic and nutrient treatment are much better than they were before I used the inunctions."

PART II.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

Bacteriological Diagnosis: Tabular Aids for Use in Practical Work. By JAMES EISENBERG, Ph.D., M.D. Translated and augumented, with the permission of the Author, from the Second German Edition, by NORVAL H. PIERCE, M.D. Philadelphia and London: F. A. Davis Co. 1892. Pp. 184.

IT is somewhat unfortunate that this translation of the second edition of Dr. Eisenberg's well-known tables should appear almost simultaneously with a third and greatly enlarged edition of the original. Still there can be no doubt that the translation will be welcome to those bacteriological workers who do not read German, a happily diminishing class.

The organisms described are 138 in number, and are divided into—I. Non-pathogenic bacteria; (*a*) liquefying gelatine; (*b*) not liquefying gelatine. II. Pathogenic bacteria; (*a*) cultivated outside the body; (*b*) not cultivated outside the body. III. Fungi. The descriptions are given in the form of tables under the following headings for bacteria:—Place found; form and arrangement; motility; growth on gelatine, agar, potatoes, blood-serum; temperature at which growth occurs; rapidity of growth; spore formation; aerobiosis; gas production; gelatine reaction; colour production; aniline reaction; pathogenesis.

In the case of the fungi the headings are different and as follows:—Place found; colour of growth; mycel arrangement; fructificative organs; growth; temperature; examination methods; pathogenesis.

At the head of many of the tables references are given to the most important papers on the organisms in question.

It will be seen that the arrangement is most convenient; and the great popularity enjoyed by the work will be readily understood. In fact it is a work which can scarcely be dispensed with by any practical bacteriologist. On the whole, the translator seems to have done his work fairly well. Some of his additions are, however, not very fortunate—as, for example, the table in which the organism of scarlatina described by Klein is confounded with that described by Edington. There is not much room for style in translating such a work as this; but the very first sentence, describing the first organism, Bacillus prodigiosus, is in want of improvement. "Most probably *it* settles from the air on to the nourishing material; but, up to the present, *they* have not been demonstrated in the air."

In an appendix a very good description is given of the methods used in the cultivation and staining of micro-organisms. The volume concludes with an excellent index.

The Principles and Practice of Medicine, designed for the use of Practitioners and Students of Medicine. By WILLIAM OSLER, M.D., F.R.C.P., Professor of Medicine in the Johns Hopkins University; Physician-in-Chief to the Johns Hopkins Hospital, Baltimore; formerly Professor of the Institutes of Medicine, M'Gill University, Montreal; Professor of Clinical Medicine in the University of Pennsylvania. Edinburgh and London: Young J. Pentland. 1892. Pp. 1,079.

ANYTHING from the pen of Prof. Osler necessarily raises great expectations in our mind, and it was with the feeling that there was something good in store for us that we undertook the perusal of his latest work. Having carefully examined the book, our verdict is that it is one of the best text-books of medicine that it has been our good fortune to meet.

This handsome and well-printed volume is no mere compilation of extracts taken from older works. On every page we find the author's personal experience and opinions, not dogmatically laid down, but clearly put forward in conjunction with other and opposing views. One of the circumstances that introduces into this book something of novelty and freshness for a British reader, is the fact that every subject is looked at from an American point of view; American authorities and statistics are quoted; American epidemics and health-resorts are mentioned; and one or two diseases are described which, as far as is known, have been observed only in America.

The general arrangement of this work is much the same as that found in other works on medicine. The chief novelty in arrangement is that diseases caused by animal parasites—psorosperms, intestinal worms, parasitic insects, &c.—are included in a section by themselves. If this method of classification were fully carried out, there ought to be another class of diseases caused by vegetable parasites; for this, however, in the absence of any knowledge as to the exciting cause of the exanthemata and other specific fevers, the time has probably not yet come.

Many of the articles are really first-class. The work opens with an admirable account of typhoid fever, which occupies about 38 pages. We read with interest that the first physician who clearly laid down the difference between typhoid and typhus was Dr. Gerhard of Philadelphia. "His papers in the American Journal of the Medical Sciences," says Osler, "are undoubtedly the first in any language which give a full and satisfactory account of the clinical and anatomical distinctions which we now recognise." With regard to that much-debated subject, the treatment of typhoid, Osler seems to favour a rigid system of hydrotherapy, and bathes a patient every three hours if his temperature is above 102·5° F. Intestinal antiseptics he thinks useless, but harmless. Tuberculosis is treated as a whole, and instead of finding phthisis among diseases of the lungs, tubercular meningitis among nervous diseases, &c., we find one chapter describing every form of tubercular affection, and occupying 72 pages. This plan is a good one, and avoids the necessity of much repetition. While, however, typhoid, tuberculosis, pneumonia, and other diseases are described in a truly admirable manner, some affections do not in our opinion get anything like the attention they deserve. There is no disease more common or more important to the medical man than bronchitis; we find, however, that acute bronchitis occupies only two pages and a half, and chronic bronchitis two and three quarters. Again, chorea occupies 12 pages, while only one and a half are allotted to insular sclerosis, two to migraine, and two and a half to tetanus. Such inequalities are much to be regretted. It appears to us a very serious omission that there is no introduction to several of the sections on clinical pathology and modes of examination. For students the work is seriously diminished in value by the fact that there is no classification or explanation given of the morbid sounds and other phenomena in the lungs; we are plunged at once into râles and tubular breathing, and are not told how these phenomena are produced, or what is their clinical importance. Again, we think there should have been an introductory chapter to the section on diseases of the nervous system, in which there might be an account of reflexes, spasm, incoordination, and other matters of clinical importance connected with the pathology of the nervous system. These omissions are the more inexplicable, as there is a chapter on the methods of clinical examination of the stomach: Ewald's Probefrühstuck, Tropæolin OO, &c. We regret, too, that there are not a few more illustrations in the book. Excluding temperature charts there are only five diagrams, all of which relate to the nervous system. Illustrations of urinary sediments, of the various system-degenerations in the spinal cord, and of similar objects, would not have greatly increased the size or cost of the work, and would have rendered it more useful. For our own part, we do not see why books on practice of medicine are not much more fully illustrated than they usually are. Works on surgery contain woodcuts of most of the diseases and morbid conditions that they refer to, but half a dozen diagrams are thought sufficient for many large and important works on medicine. These things ought not so to be.

As might be expected in Prof. Osler's work, the most recent views on pathology are mentioned: Laveran's plasmodium malariæ, Eberth's bacillus of typhoid, Löffler's diphtheria bacillus are sufficiently mentioned. Rare and recently described diseases—such as Weil's disease, Malta fever, and Thomsen's disease—are not overlooked. The index of contents deserves the greatest praise; it is unusually full and accurate.

If we have called attention to what seem to us to be defects in this work, we have done so in no hostile spirit. On the contrary, we have formed an exceedingly high opinion of its merits and excellences, and consider it one of the best works on the practice of medicine that has appeared in the English language.

Royal University of Ireland. The Calendar for the Year 1892. Dublin: Alex. Thom & Co. 1892. 8vo. Pp. 390.

Royal University of Ireland. Examination Papers, 1891. Dublin: Alex. Thom & Co. London: Longmans, Green & Co. 1892. 8vo. Pp. 445 and 113.

THESE useful guides to the Students of the Royal University of Ireland have been published in the usual first-class manner.

The only important change in the subjects of Examination in the Faculty of Medicine for 1893 is the transference of Pharmacology (Materia Medica) from the second to the third Professional

Examination. Notice also is given that, in order to carry out the regulations of the General Medical Council under the Five Years' Scheme, the prescribed courses will be amended and "will be published during the current year" (page 173).

The Examination Papers set in 1891 are, as usual, published as a supplement to the University Calendar in a separate volume. From the numbering of the pages, the Examinations in the Arts Faculty appear to be printed separately from those in the Professional Faculties of Engineering, Law, Medicine and Music. This is, in our opinion, a good plan.

We notice with some surprise that in both volumes a very significant prominence is given to a long advertisement of the "Catholic University Medical School." One would suppose that this institution was the recognised School of the Royal University.

A Treatise on the Ligation of the Great Arteries in Continuity, with Observation on the Nature, Progress, and Treatment of Aneurism. By CHARLES A. BALLANCE, M.S., &c., and WALTER EDMUNDS, M.C., &c. Illustrated by 10 plates and 232 figures. London and New York: Macmillan & Co. 1891. Royal 8vo. Pp. 568.

IN this work, which is produced in the most luxurious style as regards paper, type, illustrations, and binding, making it a pleasure to read, we find embodied the results of the researches in which the authors have been engaged over a number of years, and to which partial publicity had already been given in the *Medico-Chirurgical Transactions*, and in the Erasmus Wilson Lectures in 1889. Here, however, the whole subject of the ligature of vessels, embracing the pathology of hæmorrhage and the process of repair, is fully dealt with, and the work as a whole constitutes the most complete monograph which exists on the subject in any language.

A very interesting chapter deals with the "Nature of Arteries," in which their minute structure is carefully examined, and the relative thickness of their tunics accurately measured and tabulated, one of the most important facts established being the extreme thinness of the walls of a healthy artery in its natural state. "Physiological Occlusion" is fully treated of, the obliteration of the ductus arteriosus being taken as a type; followed by an exhaustive review of the subject from a pathological standpoint. The chapters on the "Conduct and Fate of the Corpuscles" and the "Conduct and Fate of the Clot" are enriched with the details of many experiments, and illustrated with some beautiful plates. The use of the corpuscles and fibrin of the clot is shown to be a threefold one—they act as a barrier to the current of the blood; they form a ladder, or network, by which the repairing cells gain entrance; and when they die they serve as nutriment for the plasma cells derived from the intima of the vessel.

In the process of repair the corpuscular elements take no part. "The scar-tissue, which occludes the artery, is formed, not from the leucocytes of the blood, but from the plasma-cells of the arterial wall." And to accomplish this occlusion rupture of the coats of the vessel is not necessary. As a result of their study of physiological occlusion the authors sum up their views as follows:—"In conclusion, it may be pointed out to the followers of J. F. D. Jones, that Nature does not think it necessary, when occluding the ductus, to rupture the two inner coats in order to produce sufficient intimal growth; and to the followers of Celsus and Abernethy, that she does not divide the artery to reduce the longitudinal tension—on the contrary, she does not hesitate greatly to increase it; nevertheless, in her hands, failure to occlude very rarely occurs, hemorrhage (*sic*) never" (p. 78). Most interesting are the experiments in the Ziegler chambers, and the light they throw on the process of clot-formation. The formation of the fibrin trabeculæ radiating from a fibrin node, presumably the seat of disintegration of a blood-platelet, and the subsequent inroad of the plasma cells along these guide-lines were clearly seen, and identical processes afterwards observed in arteries at various periods after ligature, and in this connection we think the authors have made a good case for their opinion "that the primary cellular invasion, the solid cylinders of cells, and, later, the capillaries, all occupy the place once held by the bands of fibrin which stretch from node to node" (p. 173). But we must pass over many other interesting physiological questions which are fully entered into and discussed in these chapters.

Most interesting, also, are those portions dealing with the changes which the coats of the vessel undergo, and also the fate of aseptic ligatures. It will astonish many to learn that the only ligatures that remain permanently encapsuled and unabsorbed are those of gold and of platinum. "Wires of silver, lead, iron, and probably other metals, become sooner or later completely absorbed." Much space is devoted to this question of resistance to absorption in the choice of a ligature, the experiments mainly being made with kangaroo tendon and chromic catgut, and with ligatures made from the peritoneum of the ox. Silkworm gut is the most resistant, but is inconvenient in use; next come peritoneal ligature and kangaroo tendon; but chromic catgut, which resists absorption for a month or more, the authors consider sufficient for all purposes if the wound is kept aseptic.

But the two main questions which the authors have set themselves to establish on a definite basis are—the question of rupture of the inner and middle coats, and the mode of occlusion of the artery by the ligature. We cannot help agreeing with the writers, and accepting their case as proven, that rupture of the coats is not only a needless, but a dangerous and unphilosophic procedure; but we cannot here even summarise the mass of evidence they have brought together in support of their contention. And readers must find in the book itself the description of the "stay-knot" which the authors have devised for ligature in continuity. One important point to be remembered is that when the coats are not injured, a larger surface of the arterial wall must be put in apposition by the ligature, and this is accomplished by the use of several strands of ligature applied in the way recommended. As regards the occurrence of hæmorrhage after ligation, we may quote the following sentence:—"When the coats are ruptured hemorrhage will happen most often with those arteries in which the outer coat is thinnest, the collateral branches most numerous, and the minimum of clot deposited; that in those cases the full force of the blood-current breaks upon and rends the outer tunic, where it alone confines the blood within its natural channel; further, by antiseptics alone the great arteries of the body cannot be ligated as far as hemorrhage is concerned with absolute safety, but this result may be expected when with asepsis is combined the employment of a suitable ligature, so applied as to occlude the artery without damaging its wall." It will be noticed that in this passage, as throughout the book, the authors adopt the barbarism "hemorrhage," and elsewhere we have noticed "leucocythemia;" but why do they not in consistency write "pyemia," which frequently occurs in its *proper* form? Again, a little more careful revision would have avoided such solecisms as "is" for "are" on two occasions (pp. 225, 236); "equal for" as a synonym of "sufficient;" "and which," on several occasions; and such a sentence as the following—"The processes of healing and inflammation are for all practical purposes identical in the higher animals which we have employed, with that which is observed following upon the wounds of men." Again, "Lancereux," "Kocker," "Volckmann," are evidences of want of care; but these are minor blemishes which a future edition will rectify, and we only regret their occurrence in a work which is in every other respect admirable—in the completeness of its experimental work, in the closeness and clearness of its reasoning, forming as it does a *chef d'œuvre* of British surgery.

It should be added that the book possesses an exhaustive bibliography and an admirable index—indispensable aids to its study.

Tuberculosis and its Successful Treatment. By ROBERT BELL, M.D., F.F.P.S.G., &c.; Senior Physician to the Glasgow Hospital for Diseases Peculiar to Women, &c., &c. Glasgow: D. Bryce & Son. 1892. Pp. 60.

THE treatment which Dr. Bell advocates is that by means of calcium chloride. He gives 15–20 grains three times daily, and narrates several cases illustrating the successes he has had.

There is, as well as this, a good deal of writing about Phagocytes, Koch, and some other subjects.

The importance of the book is not very great. Dr. Bell's remarks would have been more suitably confined within the limits of an article in one of the medical journals.

Differentiation in Rheumatic Diseases (so-called). By HUGH LANE, L.R.C.P., M.R.C.S.; Surgeon to the Royal Mineral Water Hospital, Bath; Hon. Medical Officer to the Royal United Hospital, Bath. London: J. and A. Churchill. 1892. Second Edition. 8vo. Pp. 121.

IN the number of this Journal for April 1891, we favourably reviewed the first edition of this monograph, which consisted of a modest pamphlet running only to 27 pages. The present edition is of a more ambitious kind—running to nearly five times the length of its predecessor, dealing in considerable detail with the treatment of the troublesome group of maladies included under the generic term "Rheumatic," and containing a number of very fair though necessarily small illustrative plates.

The third chapter is on Gout. While somewhat sketchy, it contains a good deal of information and valuable advice on treatment. We do not like the expression "anti-goutic remedies," which occurs at page 93. Mr. Lane considers that the "general idea that an acute attack of gout 'does good' and clears the system" "*is a mistake*"—and we agree in this opinion.

Chapter IV. gives advice as to the mineral thermal water treatment as carried out at Bath. In Chapter V. this treatment is shown to be in no way injurious in heart cases.

We like Mr. Lane's book and recommend it.

Essays on Acromegaly. By DR. PIERRE MARIE and DR. SOUZA-LEITE; with Bibliography and Appendix of Cases by other Authors. London: The New Sydenham Society. 1891. Pp. 182.

THE thanks of the profession are due to the New Sydenham Society for their timely publication of these essays. Acromegaly has only been recognised as a distinct entity for some six or seven years, and although during that time cases have been reported by a good many physicians, still the literature of the disease has been up to the present, as far as English-speaking people are concerned, chiefly confined to the various journals, most of the text-books on medicine either devoting but little space to this malady, or else passing it over altogether.

This want of a complete and accurate account of this curious disease is now removed. The volume before us contains nearly all that is known on the subject. It comprises the original essay by Dr P. Marie, published in 1885. He based his description on two cases which he had himself most carefully observed, and on five others which had been recorded by other physicians who did not fully appreciate their nature.

The second and larger part of the book consists of a systematic thesis on acromegaly by Souza-Leite, a friend and pupil of Marie. This essay is really the classical description of the disease. Souza-Leite discusses, as fully as it is possible to do, the ætiology, pathology, and symptoms of the malady, and devotes particular attention to its diagnosis—a most valuable feature in the case of so unfamiliar a disease. He then gives accounts of 36 cases from the notes of several observers.

At the end of the volume the translator has collected the accounts of 10 additional cases, some of which were only published in July, 1891.

The value of the book is much increased by a large number of woodcuts and diagrams lent by Dr. Marie, which show the leading features of the disease. Some of these are rather rough, but on the whole they are very instructive.

The translation has been done by P. S. Hutchinson, M.R.C.S., who has done his part of the work in an admirable manner. Indeed, for the entire book we have nothing but praise.

The Water-Cure in the Bedroom; or, Hydropathy at Home. By G. H. DOUDNEY, M.B., M.R.C.S. Eng.; Late Resident Medical Officer to the Seamen's Infirmary, Ramsgate. Bristol: J. Wright & Co. Pp. 46.

THIS little book consists of an introduction stating the general principles and rules of the water treatment, and of a series of articles on the treatment of a number of common ailments by means of hydropathy. The ailments selected belong to that class of chronic ailments that are exceedingly distressing without being dangerous to life, and are, in consequence, treated at home by various empirical and household measures—such ailments as constipation, headaches, chronic rheumatism, indigestion, &c. The author believes that water treatment will be found of much use, and has written this book for the general public in the hope that they may be induced to give it a trial, and not to have constant recourse to the "domestic drugging which goes on so much now-a-days." The directions given are admirably clear; any one can carry them out without fear of making a mistake. We welcome the book, and believe that it will be found useful by many.

The Diseases of the Nervous System. By J. A. ORMEROD, M.A., M.D. London: Churchill. 1892. Pp. 328.

THIS little work is one of Churchill's Student's Guide Series, but is in point of merit far above the general level of such works. It is indeed a most excellent guide to anyone wishing for an introduction to the study of the important and difficult class of disease with which it deals. The author modestly says the work is offered to the student as no substitute for the larger and more elaborate treatises on the same subject, "but only as an introduction to his work and outline map of territory to be acquired; and should it thus prove to him, perhaps by its very smallness, an encouragement and aid, then it will have served its end." We shall feel greatly surprised if it does not become a very popular guide to students of all ages, for we know very few works in which so much accurate information, clearly given, is to be found compressed into so few pages. It is a work we would most highly recommend to all our readers.

The Dietetic Value of Bread. By JOHN GOODFELLOW, F.R.M.S. London: Macmillan & Co. 1892. Pp. 328.

THIS book, which is one of Macmillan's excellent manuals for students, is, we are told, mainly a reprint of papers already published in the *Baker's Record.* "The object of the work is twofold: First, to lay before the general public an account of the various kinds of bread, by which their merits may be judged; and secondly, to afford technical information to students and others on the important subject of the true value of bread as a food."

In the first chapter it is shown by statistical tables "that to a considerable number of children bread is practically the only food supplied, while to the remainder it forms the chief article of diet." The importance of the inquiry is thus shown. The remaining nine chapters of the first section deal with the general metabolism of the body, classification of foods and food-stuffs, digestion, absorption, and the general principles of diet.

The second section, comprising nine chapters, deals with white bread. In this part of the book there is much of interest, and throughout evidence of wide research and original work. We find notice of a remarkable unstable compound formed during baking, by the combination of gluten, casein, and gluten-fibrin with some of the disintegrated starch. It has been found that when this is acted on by the gastric juice the starch is set free and the glutens are much more easily digested than if they had been heated alone. When the compound is acted on by diastase, the starch is rapidly converted into sugar, the glutens being set free.

Interesting tables are given to show that, for the money it costs, white bread affords more nutritive matter than any other kind of food. At the same time it is pointed out that in bread the proteids are deficient in proportion to the carbohydrates, and since the poorer classes depend largely on bread as their staple food, it is of great importance that the proteids should be raised in bread, so as to make it more nearly a perfect diet. Furthermore, it is shown that bread is deficient in lime; and therefore, particularly in the case of children, must be supplemented by milk or other substance rich in lime and phosphoric acid.

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The results of the experiments of most physiologists have shown that white bread is very perfectly digested. The author, in experiments by artificial digestion, found that the waste in fine white bread never exceeded 3·8 per cent. In experiments on himself the waste was 4·2 per cent.; coarser bread averaged 4·9 per cent.; white rye bread, 10·9 per cent.

Still, from a consideration of the chemical composition of white bread, it is concluded that "it is entirely unsuited for infants, and even when supplemented by milk the surplus of carbohydrates and the deficiency of fat cannot be entirely obviated." These defects are strikingly shown when bread is compared with milk, the natural food of infants.

It is highly satisfactory to learn that the author can state, as the result of an exhaustive series of examinations of various foods, that "it is now certain that the bread supplied to the people of England is practically pure."

The third section, of seven chapters, is on wholemeal bread. "The author is not opposed to the use of wholemeal bread, *provided the meal is properly prepared,*" but "he has come to the conclusion that the wholemeal bread made from *ordinary* wholemeal is not always a desirable food." It is not a perfect food, since it yields too little proteid, and fat, and mineral matter, but a surplus of carbohydrates; the bran is not usually reduced to a sufficiently fine state of division; the digestibility is inferior to white bread; and the bulk is too great for the amount of nutriment yielded. Furthermore, it is not only indigestible itself, but it leads, if taken in considerable quantity, to an increase of waste in the digestion of other foods. These objections to *ordinary* wholemeal bread apply in much less degree to *fine* wholemeal bread, which is fairly well digested, and unirritating to the digestive organs. As it yields more alkaline phosphates and has a higher proteid ratio than white bread, it is concluded that it may be of special value to those who are constipated, who are inclined to become corpulent, to nursing and pregnant women, to children above the age of ten months, to those who have a tendency to decay of the teeth (!), and to children inclined to rickets.

The fourth section, of ten chapters, treats of special breads. In these chapters much valuable and practical information will be found, but we can notice only a few points. The author believes that triticumina bread is as near a perfect food as wholemeal bread can be, and that "it deserves the universal commendation which has been accorded to it by the medical and analytical world." Smith's patent germ bread is stated to be "far superior to fine white bread or ordinary wholemeal bread as a food." Bonthron's gluten bread is "practically as free from starch and sugar as is possible," and "a valuable food for all those who are troubled with diabetes, and is by far the best preparation of its kind that has ever been produced."

The two concluding short sections deal with the diseases and abnormal conditions of bread, and with the medicinal properties of bread.

In conclusion, we would strongly recommend this book to our readers. Every physician will find in it much useful matter and many valuable hints, which will guide him in the dieting of his patients—a matter which often presents far greater difficulty than the prescription of drugs.

An Index of Diseases and their Treatment. By THOMAS HAWKES TANNER, M.D., F.L.S. Fourth Edition, Revised by PERCY BOULTON, M.D., M.R.C.P., London; Senior Physician to the Samaritan Free Hospital, &c. London: Henry Renshaw. 1891. Pp. 512.

THIS "Index" has been found useful by many medical men in the past, and we doubt not that in the future this edition will prove as popular as its predecessors. It has been revised and brought up to date, old-fashioned synonyms and obsolete remedies having been expunged, and new and important matter introduced.

While we fully recognise that this book has become popular among medical men, and that a work now in its fourth edition is in a position to despise all hostile criticism, nevertheless we must say that we feel considerable doubts as to its use. It consists of an alphabetical list of diseases. Under each heading we find a brief list of symptoms, and a list of drugs or of references to formulas for treatment. There are hardly any indications mentioned as to when the different remedies are advisable or the reverse. We fear that the tendency engendered by such an "Index" as this is to pick out a drug or prescription mentioned in the article on the disease in question, whatever it may be, and to treat or attempt to treat the disease and not the individual case. We think that if an index of treatment is written, it should be large enough to discuss at some length the reasons for the various lines of treatment mentioned, and we believe that mere lists of drugs with little else are to be avoided.

Die Behandlung der Tuberculose mit Tuberkulocidin. Verläufige Mittheilung von PROFESSOR D. E. KLEBS in Zürich. Zweite Auflage. Hamburg and Leipzg: L. VOSS. 1892. Pp. 39.

IN this pamphlet Professor Klebs details the results which he has obtained in the treatment of tuberculosis in animals and in men, by injections of tuberculocidin, a purified tuberculin from which the injurious matters are removed, while the curative albumoses remain. The results are said to be of the most encouraging description, and if they are confirmed by other observers will, no doubt, have an important effect on the treatment of tubercular affections.

Full details are given of the mode of using the drug, which is now an article of commerce, and can be had at six marks the cubic centimetre from the Höchster Farbwerken in Höchst a. M.

The Essentials of Histology, Descriptive and Practical, for the Use of Students. By E. A. SCHÄFER, F.R.S. Third Edition. London: Longmans, Green, & Co. 1892. Pp. 302.

THE appearance of a new edition of Professor Schäfer's excellent Essentials of Histology will be welcomed by all students of anatomy. The present issue has been extensively revised, and many important alterations and additions have been made. Among the latter the most noteworthy are the results of the new methods which have been introduced by Golgi and his followers for the examination of the nerve-centres. These new researches are perhaps rather too briefly described, but are magnificently illustrated by drawings copied from the works of Retzius and Ramon y Cajal, as well as by original diagrams. The author has also incorporated in the work the results of his own recent valuable researches in the structure of striped muscular tissue. The text is illustrated by 325 drawings, all of great beauty; and the abundant illustrations have made it possible to curtail the text within much narrower limits than is usual in a book of such wide scope. The way in which the work is brought out, and its low price, leave nothing to desire. On the whole, it is a work which can scarcely be too highly praised.

The New Sydenham Society's Lexicon of Medicine and the Allied Sciences. (*Based on Mayne's Lexicon.*) By HENRY POWER, M.B., and LEONARD W. SEDGWICK, M.D. Part 17. Mas–Mit. London: 1890.

AT its present rate of production the younger subscribers to the New Sydenham Society will be old men before their ponderous Lexicon is completed. This 17th fasciculus carries us only into letter M, and little remains to say beyond chronicling each part as it comes to light. We learn from this part that *Meybom* and not *Meibom* is the correct orthography of the German physician whose name is perpetuated in relation to the follicles and cysts of the eyelids. The printing is very carefully done; we noticed but one misprint—viz., Méhn, Camille, a French pharmaceutist, which should read Méh*u*.

Materia Medica and Therapeutics. Vol. I. By J. V. SHOEMAKER, M.D., and J. AULDE, M.D. 1889. Vol. II. By J. V. SHOEMAKER, M.D. 1891. Philadelphia and London: F. A. Davis.

WE cannot but admire Dr. Shoemaker's ceaseless energy and capacity for work. He seems never to tire writing, speaking, and travelling, and he is a well-known figure at medical gatherings outside his own country.

He now presents us with a new work upon Materia Medica and Therapeutics. The second volume is entirely from his pen, while in the preparation of the first volume, which was published two years previously, he had the assistance of Dr. Aulde.

In compiling this work Dr. Shoemaker was fired with the laudable ambition to "cut loose from the traditional heresies that have been handed down from time immemorial," without at the same time condemning as "obsolete empirical methods which have shown their value in times gone by!" and he hopes that his work will receive from the medical profession a welcome in keeping with the care that has been given to its preparation.

We quite recognise that the book has merits. It is brightly written and well up to date. Yet we do not think that it at all comes up to the author's ideal, or exhibits distinctive novelty, and it is certainly not free from many errors and inaccuracies which are open to criticism. The first volume is chiefly devoted to a consideration of remedial agents other than drugs (oxygen, peroxide of hydrogen, and nitrous oxide are strangely included), and to matters of general scope—such as pharmaceutical processes, dosage, and the principles of prescribing.

The second volume, after a short introduction, deals exclusively with drugs, and takes them up in alphabetical order. Special attention is paid to the therapeutical applications, and this is, in fact, one of the best features of the work.

Leçons de Thérapeutique. Par G. HAYEM. 3^{me} Série. Les Médications. Paris: G. Masson. 1891. Pp. 450.

M. HAYEM'S work, when completed, will occupy four volumes. The one under notice is the third of the series, and deals chiefly with neurotic remedies and with drugs acting upon the cardiac mechanism.

The book is pleasantly written, and without going profoundly into the subject, gives an excellent *résumé* of pharmacology and therapeutics. Several chapters are devoted to the treatment of failing compensation of the heart, for which condition the author uses the uncouth term *kinésitaraxie.*

Lectures on Children's Diseases. By DR. E. HENOCH. Vol. II. Translated from the fourth edition (1889) by J. THOMSON. M.B., F.R.C.P., Edin. London: The New Sydenham Society. 1889.

WE had occasion some time since to speak favourably of Vol. I. of this work, and especially of its essentially clinical and practical character. The same characteristics are observable throughout this volume, and it is needless to do more than indicate the chief subjects of which it treats. Nearly one-third of the book is devoted to diseases of the digestive organs, which are carefully described. The section upon diseases of the urinary organs is mainly occupied by an account of nephritis. Under the heading of Infectious Diseases we have scarlet fever, measles, chicken pox, diphtheria, and typhoid fever; and under Constitutional Diseases are ranked rheumatism, anæmia, purpura, scrofula, and rickets. The concluding chapter deals with some diseases of the skin. It makes no pretensions to completeness, and treats only of those affections which are either much more common in children, or present with them certain peculiarities. The entire work is an extremely valuable contribution to medical literature, and is deserving of all praise.

The Lord of Humanity, or the Testimony of Human Consciousness. With Supplement on the Mystery of Suffering. By FREDERICK JAMES GANT, F.R.C.S. Second Edition. London: Longmans. Green, & Co. 1891. Pp. 163.

PRACTICALLY a reprint of the first edition. Commencing with the three dominant passions—Fear, Cupidity, and Love—and the classes of mankind under the rule of each, the author deals with man as an evolutionary being, his conception of God, and the Revelation of Christ. In the midst of many thoughts and surmises there is the one leading idea that God is Love, and that the keynote to Religion must be found in this. The book is of deep interest, but occasionally the author allows his subject to carry him away, as on page 79, where the following paragraph occurs. We give it in full, to show the line of thought to which the latter part owes its origin:—

> "The *Religion* of the Atonement is *Self*-sacrifice. The Law of all Living Beings is Self-sacrifice, unconsciously or consciously. The hen-bird brooding over her young, starves herself rather than forsake them: or she fights to the death for their preservation, losing her own life that they may live. And in the 'struggle for life,' the weaker are sacrificed to the 'survival of the fittest.' All such loss of Self, in a thousand forms, is only the unconscious fulfilment of the law of self-sacrifice for the good of others."

The first part is undeniably true; the parental instinct affords some of the most striking—indeed they may be called marvellous, examples of self-sacrifice; but the struggle for existence—the survival of the fittest—is very different. These afford the most hideous picture of the ruthless trampling down of the weak by the strong. Sacrifice of others to advance self are often met with, but self-sacrifice never.

It is hard to imagine anyone reading "The Lord of Humanity" without having his mind stirred up to face some of the problems connected with a future life.

Pye's Surgical Handicraft. With 235 Illustrations on Wood. Third Edition. Revised and Edited by T. H. R. CROWLE, F.R.C.S., &c., &c. Bristol: John Wright & Co. 1891. 8vo. Pp. 570.

THIS well-known manual for house surgeons and surgical dressers appears in its third edition under the careful editorship of Mr. Crowle, Surgical Registrar to St. Mary's Hospital. The leading features of the book have undergone but little change, the editor's endeavour, as explained in the Preface, having been "to make the book still more useful than it has hitherto proved itself, and at the same time to depart in no degree from what, as far as I can judge, would have been the wishes of the author respecting it." This intention has, so far as we can judge from the perusal of various sections, been faithfully carried out. Though not approving of all the opinions expressed—*e.g.*, the treatment of fractured patella by Malgaigne's hooks—still, most of these questions are of such a nature that the task of decision will not rest upon those for whom the work is specially prepared. We cordially wish the book every success under its new pilot. The paper and type are good, but the binding hardly sufficiently strong for the size, and probable treatment, of the volume.

Abdominal Surgery. By J. GREIG SMITH, M.A., F.R.S.E.; Surgeon to the Bristol Royal Infirmary, &c., &c. Fourth Edition. Eighty-two Illustrations. London: J. & A. Churchill. Bristol: J. W. Arrowsmith. 8vo. Pp. 806.

WHEN a book, which is a treatise of eight hundred pages on a special branch of surgery, has reached a fourth edition in an exceedingly short space of time, it is safe to conclude that it has met a recognised want, or that, recognising a want, it has met it in a way that has proved satisfactory to those professing surgery. In any case, before the coveted symbols, "*Ed. 4ta.,*" criticism stands disarmed and gives place to congratulation, which is at all times a more pleasing duty, and most pleasing of all when the object of commendation is in every way worthy and deserving of all we can say of approval or flattery. No one who has ever appealed to Mr. Greig Smith's book has, we feel sure, appealed in vain; and in this volume, revised to date, "several novel methods of operating have been introduced." It is a certain indication of the wide appreciation of Mr. Smith's work to know that translations are being made of this Edition into French, Italian, and German. With only one revision do we quarrel—Mr. Smith has adopted Dr. Harris's hideous term, "cœliotomy," as a synonym of "abdominal section."

Materia Medica, Pharmacy, Pharmacology, and Therapeutics. By W. HALE WHITE, M.D., F.R.C.P. London: J. & A. Churchill. 1892. Pp. 614.

A COMPACT little volume, containing a marvellous amount of information so arranged as to be easily found. Pharmacy occupies 24 pages; Pharmacology, 80 pages; the bulk of the book being occupied by Materia Medica. The non-official remedies are kept separate from those in the B. P. Under the heading of each drug, in addition to the usual information about source, preparations, &c., there are hints as to what substances they may be mistaken for, and a differential diagnosis is given.

The author seems to have held the balance fairly; unimportant substances being treated shortly, whilst able and well-condensed therapeutic essays are given on valuable drugs. There are tables of incompatibles and substances which precipitate each other, the usual table of Latin phrases, and a capital table of natural orders, like the well-known one in "Squire's Companion," but keeping the drugs in each order together.

The Rheumatic Diseases (so-called) with Original Suggestions for more Clearly Defining Them. By H. LANE, L.R.C.P., Edin., and C. T. GRIFFITHS, L.R.C.P., Lond. London: J. and A. Churchill. 1890.

THE authors have had the advantage of an extensive experience among the patients who flock to the mineral waters of Bath, and the present book is the outcome of their personal clinical research. The best feature of the book consists in the illustrations, which are 11 in number. They represent, in an effective way, the lesions seen in rheumatoid arthritis, chronic rheumatism and gout. Figs. 4 and 4ª illustrate the occurrence of pigmentation of the skin in connection with rheumatoid arthritis. We cannot speak so highly of the text. It is written in a somewhat inflated and pompous style, and it is not always easy to decipher the authors' meaning.

In the treatment of sciatica stress is laid upon the administration of ammonium chloride in large doses—20–30 grs.—three times a day, and it is asserted to be the only drug which appears to exert anything like a specific action upon the pain.

Tables for the Diagnosis and Treatment of Syphilis. By J. K. Barton, M.D., Senior Surgeon to the Adelaide Hospital, and Past President, R.C.S.I. Third Edition. Dublin: Fannin & Co. 1892. Pp. 27.

This new edition of these well-known tables contains the treatment of syphilis. This addition was made at the request of a number of the author's student-friends, who had found the former editions very useful.

Mr. Barton's treatment consists of inunction of mercurial ointment combined with the use of quinine for the earlier stages of the disease, while in the later stages he generally gives the green iodide. It is a pity that the proof-sheets of this little book were not more carefully corrected, as a large number of typographical mistakes appear in it. We find pupules (for papules), esophagus, sets-pus (sero-pus), mediastinae, dactylis for dactylitis, ottitis, and pericianium. We also read of a condylomata.

The chief feature in these tables is the way in which Mr. Barton has emphasised the more important points, by means of large print, so that they catch the eye at once—a circumstance which renders the book easy for a student to make up. We expect that this edition will enjoy even more popularity than its predecessors have done.

PART III.

SPECIAL REPORTS.

◆

REPORT ON PUBLIC HEALTH.

By **Sir Charles A. Cameron**, Ex-President, Diplomate (*Honoris Causâ*) in Public Health, and Professor of Chemistry and Hygiene, R.C.S.I.; President of the British Institute of Public Health, and of the Irish Medical Association; Examiner in Sanitary Science, Royal University; Member of Army Sanitary Committee; D.P.H. Camb.; Fellow of the College of State Medicine; Medical Officer of Health for Dublin, &c., &c.

ON SOME POINTS IN THE ÆTIOLOGY OF TYPHOID FEVER.[a]

The mortal statistics, published during the last twenty years or so, show that with rare exceptions the zymotic death-roll is steadily declining in all parts of these countries. In Dublin, for example, the deaths from the principal zymotic diseases were, in the period 1876–80, in the ratio of 5·29 per 1,000 persons living. In the next quinquennial period the rate declined to 3·06: in the five years ended in 1890 the rate further declined to 2·86; and in 1891 it was only 1·7—which was lower than the mean rate in the twenty-eight large English towns. The mean zymotic death-rate in twenty largest English towns in the period 1882–1886 was 3·14; but in the five years 1887–1891 it was reduced to 2·78 per 1,000 persons living.

Whilst the zymotic death-rate has declined in a very marked manner in Dublin, and in British and Irish towns generally, there has not been a corresponding reduction in the mortality ascribed to typhoid fever. On the contrary, in some towns it has remained stationary, or even shown a tendency to increase. In Birmingham, for example, it has not declined, and in Belfast and Dublin it has increased. Through the kindness of the medical officers of health of forty-nine large towns or districts, I have been able to ascertain the mortality caused by typhoid fever in those places, and I have arranged them in the following table:—

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[a] The Cavendish Lecture, delivered before the West London Medico-Chirurgical Society, 2nd June, 1892, by Sir C. A. Cameron.

Deaths from Typhoid Fever per 10,000 *Persons living in the following Places.*

Place	Year					Average for 5 years
	1887	1888	1889	1890	1891	
Woolwich	0·73	0·49	0·98	0·73	0·73	·730
Kensington	0·60	1·20	1·10	0·90	1·40	1·040
Paddington	0·99	1·30	1·40	0·80	1·40	1·180
Islington	1·03	1·61	1·62	0·92	0·87	1·210
Croydon	0·85	1·35	0·91	1·09	1·06	1·250
Bristol	1·00	1·20	1·70	1·40	1·00	1·260
Brighton	1·60	1·30	1·50	1·10	1·10	1·320
Camberwell	1·74	1·32	1·15	1·106	—*	1·329
Whitechapel	0·80	1·70	1·20	2·10	·90	1·340
Cork	2·25	1·25	·50	·87	1·87	1·348
Bradford	1·43	0·82	2·04	1·29	1·24	1·364
Chelsea	2·89	·63	1·37	1·15	·82	1·372
Edinburgh	1·46	1·02	1·19	1·62	1·60	1·378
Wolverhampton	1·75	1·36	1·10	1·09	1·81	1·422
Hackney	2·00	1·15	1·25	1·30	1·63	1·466
Pancras	1·19	2·43	1·24	1·36	1·15	1·474
Newcastle	2·70	1·40	1·00	1·30	1·00	1·480
Huddersfield	1·00	1·30	1·10	2·50	1·60	1·500
Dundee	2·10	1·30	1·02	1·40	1·80	1·524
Birmingham	1·90	1·50	1·00	1·40	1·80	1·520
South Shields	1·15	1·39	1·08	2·35	1·89	1·572
Shoreditch	2·02	1·62	1·37	1·27	1·63	1·582
Southwark	2·00	Nil	Nil	2·00	4·00	1·600
Oldtown, Mile End	1·50	1·40	1·25	1·96	1·96	1·614
Holborn	1·73	1·17	1·17	2·05	2·15	1·645
Hull	1·40	1·60	2·10	1·60	1·80	1·700
Southampton	1·23	1·07	0·77	0·92	1·37	1·720
Oldham	2·02	1·90	1·56	1·15	2·04	1·734
Derby	2·10	2·90	1·10	1·80	1·10	1·800
Glasgow	1·90	1·10	2·00	1·90	2·20	1·820
Leicester	1·89	2·24	1·54	1·68	2·03	1·876
Gateshead	2·00	1·80	1·00	5·00	1·30	1·884
Halifax	1·51	1·12	2·71	1·58	2·65	1·914
Norwich	1·83	1·56	1·72	3·32	1·40	1·970
Londonderry	2·33	0·66	2·00	4·30	1·00	2·058
Swansea	2·90	1·90	2·00	2·00	2·40	2·240
Cardiff	1·62	3·31	2·58	1·96	1·84	2·262
Liverpool	2·40	2·40	3·20	1·90	1·80	2·340
West Bromwich	1·44	1·26	3·06	2·52	3·96	2·448
Bolton	2·75	2·73	2·70	1·89	2·58	2·530
Portsmouth	3·61	1·80	2·08	3·19	2·06	2·548
Birkenhead	2·25	3·26	3·53	3·00	—†	3·010
Plymouth	3·20	3·00	3·80	3·90	1·30	3·040
York	3·71	1·85	3·28	3·14	3·42	3·080
Merthyr Tydvil	4·50	1·60	4·30	2·60	2·20	3·100
Preston	5·50	2·60	5·00	2·30	2·90	3·660
Middleborough	2·30	1·70	2·70	8·20	7·60	4·500
Salford	4·30	4·70	5·80	4·20	3·80	4·560
Dublin	8·80	4·70	6·00	5·30	5·40	5·040
St. Helen's	5·10	3·10	11·20	3·40	3·30	5·220
Belfast	8·40	3·10	7·40	7·00	5·90	5·360
Mean rate in 50 towns	2·18	1·80	2·28	2·296	2·07	1·124

* Not given.

† Not ascertained.

The table shows that in Dublin typhoid fever causes a greater waste of life than in any English town except St. Helen's, and in Ireland it is exceeded only by Belfast. Both Dublin and Belfast are rather low-lying cities, situated upon the estuaries of rivers, and at present are badly drained.

Professor Notter, of Netley, has pointed out the marked increase of typhoid fever in the European army in India, which is all the more remarkable as the general and zymotic death-rates in that army have decreased. During the ten years ended in 1879 the deaths amongst the troops ascribed to typhoid fever were in the ratio of 2·03 per 1,000; in the period 1880-85 they were 2·98 per 1,000; in 1887, 3·76; and in 1888, 3·75. Compared with these rates the mortality caused by this disease in British cities, even in Dublin, seems trivial. In some foreign cities the rates, too, are very high. For example, it is stated that the deaths from typhoid fever in Chicago, United States of America, were in 1890 in the ratio of 9 per 10,000 persons living; and in 1891, 22 per 10,000. In many Italian cities typhoid fever is more fatal than in Dublin.

Typhus fever caused formerly frightful ravages in Dublin, and even within a comparatively recent period it was rather rife. If we compare the mortality produced by this disease with that attributed to typhoid fever during recent years, it will be seen that the former is rapidly dying out, whilst the latter is increasing.

DEATHS IN DUBLIN METROPOLITAN REGISTRATION DISTRICT CAUSED BY TYPHUS AND TYPHOID FEVERS.

Year	Typhus	Typhoid
1881	194	123
1882	84	135
1883	141	132
1884	83	134
1885	54	144
1886	39	129
1887	24	135
1888	31	168
1889	18	228
1890	25	185
1891	6	191

The lessened death-rate in our towns, and more especially the decrease in the mortality caused by the infective diseases, taken as a group, are unquestionably due to the improved hygienic conditions under which the urban populations are now placed. The chief modern sanitary reforms are as follows:—The introduction of ample supplies of water, taken from sources little likely to be polluted; the main drainage of towns; improvements in the construction and working of street sewers; the better methods of getting rid of the effete matters produced in dwellings; the abatement of the more serious trade nuisances; the prevention of overcrowding in tenement houses; the demolition of houses unfit for human occupation; the erection of improved dwellings for the working classes; the systematic purification of infected dwellings, clothing, and bedding; the better provision for treating and isolating fever cases; the various general Public Health Acts; the statutes relating to artisans' dwellings, to pollution of water-courses, to vaccination, to the diseases of the animals used as food by man, and the providing of parks, recreation-grounds, and open spaces in towns. The numerous local Improvement Acts, also, usually contain valuable clauses relating to sanitary matters.

These Acts of Parliament, aided by the efforts of sanitary associations, of individual sanitarians, of hygienic literature, and a more general knowledge and appreciation of the natural laws of health, are lessening decade by decade the difference between urban and rural death-rates.

The persistence of typhoid fever in so many towns in which other zymotics, notably small-pox and typhus fever, have died out or are dying out, indicates that the sanitary measures hitherto adopted have had less effect upon this fever than upon other infective maladies. The more intimate nature of this disease and the modes by which it is propagated, are subjects which possess great interest.

Typhoid fever is probably co-extensive with man; but it is more prevalent in some countries than in others, and in many parts of the world, including the British Islands, it is endemic. There seems to be little doubt as to the disease being caused by a micro-organism. The *Bacillus typhosus* has been described by Eberth, Gaffky, Fraenkel and Simmonds, Klebs and Eppinger, Koch, Myer and Friedländer, Rütimeyer and Neumann, Coates, Crookes and others.

This organism has been found in the blood, spleen, liver, kidneys, and other organs, and in great numbers in the mesenteric glands. It has been "cultivated" in various nutrient materials, and it is stated that typhoid fever has been induced by inoculation with this bacillus. Mond found them in a well at Civray, France, during an epidemic of typhoid fever in 1889. Other observers have detected them in water; Neumann[*] found them in urine. The bacilli form rods, some very short, others 2 μ broad, and forming filaments up to 50 μ in length. They are occasionally constricted in the middle and exhibit spore formation.

The question—Can an attack of typhoid fever occur without an antecedent one, has often been discussed, and has been answered affirmatively by one of the greatest authorities on the subject of fever, the late Dr. Murchison. The spontaneous origin of the *materies morbi* of the disease by the decomposition of fæcal matters, is a theory which recent bacteriological research has, I think, completely exploded. In the most recent work on the eruptive and continued fevers—that of Dr. John William Moore—the author admits that the pythogenic theory of typhoid fever can no longer be maintained, although he himself formerly was disposed to believe in it.

There being a consensus of medical opinion in favour of the microbian origin of typhoid fever, the biology of the microbe comes to be a subject of great interest.

There are pathogenic microbes which apparently soon perish when detached from the animals in which they have been developed, whilst others are more persistent, and the spores of many kinds long retain, like vegetable seeds, their vitality and power to develop under favourable conditions. When supplied with nutrient material, such as gelatine, potato, &c., the pathogenic microbes seem to live and multiply, from which we may infer that they may when detached from animals become deposited by accident in dead organic matter capable of affording nourishment to them. It may, however, be reasonably assumed that the great majority of the pathogenic micro-organisms would soon perish if the animals with which they are associated ceased to exist. It is, moreover, quite certain that the microbes which produce some diseases would continue. For example—the *Bacillus malariæ* and amœboid bodies, and no doubt the bacilli and other micro-organisms producing all kinds of intermittent fevers, have an independent existence. They are found in the soils of many marshy districts, or rich alluvium, and in the polders and banks of rivers, especially in tropical and sub-tropical climates. They existed abundantly in these islands in former times, and have been got rid of by the drainage and cultivation of the soil. These organisms are clearly of the earth; but they produce specific diseases in man.

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[*] Berliner klinische Wochenschrift. 1890.

The great variety of forms which malarial fever or ague assumes seems to indicate a plurality of poisons; which, indeed, may be the case, but to a more limited extent, with typhoid fever. Malarial organisms have been described recently by Laverna, Terni, and Girardini, Marchiafava and Celli. Golgi says that the various forms of malaria are the results of the action of different micro-organisms. The poison of malaria is conveyed to man chiefly by the medium of the air, and the characteristic organisms of the disease may be often, it is said, found in the sweat on the bodies of the people living in malarial districts. Water, however, it is well known, can hold in suspension malarial poison and retain it for considerable periods of time. In the United States it is a general belief that milk is sometimes the vehicle of this disease, and that it is spread also by the muscadine grape which grows in marshes. The rough and often glairy surface of this grape catches and retains the malarial poison. In India, France, and other countries in which malarial fevers occur, they have been in part attributed by competent observers to the use of water containing the poison of the disease. Without admitting or denying the theory that there is a kind of hybrid fever—typho-malarial—intermediate between typhoid fever and ague, I am disposed to believe that in relation to their propagation there are several points of resemblance between typhoid fever and the intermittent fevers. The intimate connection between them has been pointed out by Dr. Harley in the Lumleian Lectures for 1889. Johnston,[a] treating of Continued Fevers of the South (of the United States) says that it is probably changing its character in that region, is assuming a less defined type, and a milder form. He believes that many cases of so-called malaria are really typhoid fever, and he concludes by acknowledging the existence of a typho-malarial fever.

Kinyoun[b] found the *Plasmodium malariæ* in the blood of fever patients, and the bacillus of Eberth in their urine. He suggests for such fever the term entero-malarial.

It is established that malaria is not directly communicable from the healthy to the sound, but the same is almost true in reference to typhoid fever. The malarial poison is generally believed not to be reproduced in the human body, in which respect it differs from that of typhoid fever; but Cuboni, Marchiafava, and Gerhardt have proved that malaria is inoculable from man to man. Typhoid fever is, like malaria, propagated through the media of air, water, and food; the poison of both diseases exist, in the soil. That of malaria unquestionably ascends from the earth, and so also, probably, do the microbes of typhoid fever. The natural habitat of the malarial organisms is the earth; is this also the case with the *Bacillus typhosus?* The biology of the organism is as yet so little known that it is impossible to state positively whether or not it is capable of multiplying indefinitely in the soil. Dr. Justin Karlinski states that it does not exist longer than three months in the earth; and that when exposed on the surface of the ground to sunlight and moisture, it quickly perishes.[a] But although the organism dies its spores may long survive, and under favourable conditions develop into the mature organism. I have carefully studied Karlinski's memoir, but he has not convinced me that the organisms which produce typhoid fever completely and quickly perish in the soil. Dr. Prudden, of New York, found that typhoid bacilli after confinement for 103 days in ice retained their vitality. Cassedebat states that they can live at least 44 days in distilled water. According to Grancher and Deschamps they survive for months in soils, although surrounded by numerous other organisms.

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[a] Philadelphia Medical Bulletin. 1890.

[b] New Orleans Medical and Surgical Journal. May, 1890.

As an example of a view diametrically opposite to that of Karlinski's, I may quote an opinion expressed by Dr. Farquharson in a paper circulated by the Iowa Board of Health in 1883. Dr. Farquharson, after pointing out the resemblance between typhoid and malarial fevers, says—"Our farmers would not if they could do away with the exuberant richness of the virgin soil, nor diminish the almost tropical temperature of our summers, *yet these are the prime factors in the production of typhoid fever.*"

I am disposed to look very favourably upon Dr. Woodhead's theory, that all bacilli are primarily saprophytes—that is, have an independent existence apart from animals; and that they become, under altered conditions, pathogenic, and prey upon living tissues.[b] The saprophytes are, with perhaps the exception of the micro-organisms connected with malarial diseases, innocuous; but under certain conditions, at present not well understood, they may acquire virulence.

Those eminent bacteriologists, A. Rodet and G. Roux, have stated very positively that the typhoid bacillus of Eberth is merely an altered and virulent form of the *Bacillus coli communis* described by Escherich. This assertion is a very remarkable one. Pasteur and others have shown that the "attenuation" or degeneration of certain pathogenic microbes greatly reduces their virulence, and may even render them completely innocuous.

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[a] Archiv f. Hygiene. Bd. XIII. Heft 3.

[b] Bacteria and their Products. By German Sims Woodhead, M.D. London: Walter Scott. 1891.

According to Rodet and Roux[a] the bacillus coli communis, without losing its general botanical characters, acquires a toxic nature within the human organism, and becomes, in fact, Eberth's typhoid bacillus. The researches of Rodet and Roux seem further to show that the *Bacillus coli communis*, which may exist in the human organism without doing injury to the latter, can become highly virulent and infective when introduced into water. Hence they conclude that not only typhoid dejections, but simple fæcal pollution of water may produce typhoid fever in those who drink it. This view would seem to favour Murchison's pythogenic theory; but they really differ completely. In the latter it is assumed that the toxic principle of typhoid fever may originate in decomposing fæcal matter; but according to Rodet and Roux's theory a harmlesss saprophytic organism acquires by mere contact with water new and infective properties.

The recent investigations of Vallet[b] seem to confirm Rodet's and Roux's opinions. He shows that the *Bacillus coli communis* differs but slightly from Eberth's bacillus, and that both are infective. The former flourishes in cesspools—why not, therefore, in filth-laden soils?

It seems not improbable then that an organism which can exist for at least some weeks in earth and water is the *materies morbi* of typhoid fever. It may be harmless until it has undergone certain transformations in the system, or it may be immediately infective. Such an organism is clearly much nearer akin to the microbes of malarial disease than to those of such affections as gonorrhœa, typhus fever, or measles. The condition of soils or water has little relevancy to these and most other of the infective diseases; but it has a great deal to do with remittent, intermittent, and typhoid fevers—perhaps, also, with dysentery and diphtheria, which are probably malarial diseases.

Even if we do not admit that the microbes of typhoid fever can multiply in soils, it must be conceded that they can exist therein for at least some time. Some soils are better adapted than others to the continued existence of these and other micro-organisms. Free movement of air and water in soils is favourable to the development and prolongation of such forms of life as exist in the earth. In stiff clays there are few organisms. Air below ground differs greatly as to the percentages of its constituents from the overground atmosphere. It is extremely rich in carbonic acid, derived from the decomposition of organic matter. Owing to the kinetic law of gases, an incessant interchange is going on between the overground and subterranean atmospheres; air is penetrating downwards into the soil, and the gases contained in the latter are diffusing into the space overground. There are interchanges between the two atmospheres brought about by other causes—as, for example, differences between the temperature of the ground and the general atmosphere; the action of winds; the warming of houses, which causes an insuction of air from the ground. The ascent of ground water and the descent of rain cause expulsion of underground air, and the descent of the ground water draws the outer air into the soil.

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[a] Comptes Rendus de la Sociétié de Biologie. Tome II. No. 7. 1890.

[b] Le Bacillus Coli Communis dans ses Rapports avec le Bacille d'Eberth et l'Etiologie de la Fièvre Typhoïde. Paris. 1892.

The connection between the sinking of ground water and the occurrence of typhoid fever has been investigated with great care by Professors Pettenkofer and Buhl, of Munich. They found that the cases of typhoid fever increased whilst the ground water was sinking, and that they were most numerous when the water having been unusually high sunk rapidly to the lowest level. This theory has been supported by many eminent epidemiologists, and opposed by others. It holds good as applied to several German towns; but it is stated that in others no relation between the sinking of ground-water and increase of typhoid fever has been noticed. In England Pettenkofer's theory has not received much support. An elaborate official Report upon the prevalence of the disease in Cologne was issued in 1889, which attributes it not to fluctuations of the underground water, but rather to the temperature and composition of the subterranean atmosphere, the proportion of bacterial life in it, and the opportunities afforded the micro-organisms to invade the atmosphere.

Localised outbreaks of typhoid fever can frequently be directly traced to the use of a particular supply of polluted water or milk, but the widespread epidemics of this disease, and even its persistent occurrence in so many towns, must be due to some other cause or causes. For example, in Dublin it was epidemic in 1891–92, and in

1889 it appeared in all parts of the city and adjacent districts. The city and all its suburbs, with one exception, are supplied with water procured from a gathering ground 26 miles distant, in a mountainous region of the County of Wicklow. There are very few persons living on the drainage-shed which furnishes the Dublin pipe-water, and of those few nearly all reside in a small village close to the reservoir in which the water is impounded. Last year it was asserted that a portion of the drainage of the village passed into the reservoir, but the statement was completely refuted. I believe there are few cities in the world supplied with such good water as Dublin fortunately possesses. I make this statement from the result of many careful examinations of the reservoir and its surroundings, and of hundred of chemical and biological examinations of the water. There are very few wells now in Dublin, and only an almost infinitesimal proportion of the water drank by the inhabitants is obtained from those sources. I dwell upon the fact that Dublin has a very pure water supply, because, in view of the undoubted fact that typhoid fever is propagated by the medium of infected water, it is noteworthy that Dublin has almost the highest typhoid fever death-rate in the United Kingdom.

The one suburb of Dublin (Rathmines Township, population 27,410), which has an independent supply of water, derives it also from a pure source, the gathering grounds being districts in the Dublin Mountains composed of granite and silurian rocks. In Rathmines typhoid fever prevails much to the same extent as in the other townships, which are placed under similar conditions as regards site and drainage.

The street sewers in Dublin are of excellent construction, and many of the more important ones have been recently reconstructed. Unfortunately at present they deliver their contents into a tidal river (the Liffey) which bisects the city. The mouths of the sewers are provided with valvular gates, which close and open as the tide in the river rises and falls. Some of the sewers are sealed up for the greater part of the twenty-four hours, and consequently their contents accumulate, and have to be in part removed by the usual method of pumping them up to a higher level, from whence they are run into the river. The sewers are provided with the usual ventilators, which allow a free communication between them and the street air. It will be seen then that Dublin is a low-lying city. The floors of the basement stories of many houses are not above the level of the highest tides, and some are actually below it. It is evident then that the soils, subsoils, and rocks in the low-lying districts of the city have but a poor natural drainage, and that for a large portion of the day drainage is altogether suspended, except from the more elevated parts of the city into the lower. There is much stagnation of the water in the ground. A railway which, passing over the Liffey, connects the Dublin and Kingstown Railway with the Great Northern Railway, has recently been constructed. In sinking for foundations for the many bridges required by this line, a good opportunity for examining the nature of the subsoils and rock was afforded. I took advantage of it. I found that near the river the deep-lying gravel was more or less filled up with mud, which often possessed an offensive odour, and even evolved sulphuretted hydrogen gas. The water taken from the excavations was loaded with organic matter, and literally teemed with micro-organisms.

Fraenkel found a similar condition of things in the soil of Berlin near the river Spree. In the case of stagnant water in wells he found that when first pumped up it contained 10,800 microbes per cubic centimetre. After pumping up 500 litres the number of microbes fell to 54 per cubic centimetre. The following day, however, the water when pumped up first had 7,000 microbes per cubic centimetre, which number fell subsequently to 42.

Dr. P. F. Frankland, F.R.S., found that water which contained when collected 7 microbes per cubic centimetre, included 495,000 when kept for three days.

All this shows the wonderful development of microbian life which takes place in soil-water. But in the soil itself aerobian and anaerobian organisms are also present in vast numbers. Duclaux found two millions of them per centigram of the upper soil. The lessening of microbial life as it proceeds downwards in the earth, is, no doubt, due chiefly to the partial deprivation of oxygen—which is essential to the life of many kinds of bacteria—and perhaps to lower temperature. The life-history of the Bacillus typhosus is so little known that one can only speculate as to its behaviour in the soil. So far as we can judge, it belongs to the class of organisms which Professor Flügge terms *facultative anaerobes*, which develop most rapidly in the presence of oxygen, but can grow in the absence of air. Soil saturated with water, or stiff impertransible clays, would therefore be the least favourable for the development of the microbe of typhoid fever. A study

of the distribution of this disease in Dublin would seem to
that there is a relation between it and the geological cha
of the soil. Dublin and its suburbs are built partly upo
clay, partly upon gravel, resting upon hard rock or clay.
gravel bed was once the bottom of the sea, and now consi
raised ancient sea beaches, which extend along a consid
extent of the eastern coast of Ireland. This littoral grav
begins from the north side of Dollymount, on Dublin Bay, e
to Drumcondra, a northern suburb, and runs parallel to the ri
its whole course through the city. The gravel on the sout
of the city also runs alongside of the Liffey, extending at
points to a considerable distance south of the river. I have pre
a map showing the distribution of 1,980 cases of typhoid
in Dublin during the ten years ended in 1891. That porti
the city which is situated on the gravel, or to use its geolo
designation, "post tertiary fluvio-marine sands and gravel,
indicated by a blue line on the map. All inside this line is gra
all outside of it is the clay. 1,980 cases of typhoid fever h
so far as I can ascertain, occurred in Dublin during the ten y
ended in the year 1890. These cases are indicated by red d
on the map. Dr. Grimshaw, Registrar-General for Ireland,
ascertained the number of persons living upon the gravel and
upon the clay. Dividing by the number of cases of typhoid fe
the population on the gravel districts, it is found that they w
in the ratio of one in every 92·8 persons. A similar division
reference to the clay district shows that only one in every 14
persons had typhoid fever. It seems, therefore, that the chanc
of contracting typhoid fever are fifty per cent. greater on the gra
than on the clay. The 1,980 cases of typhoid fever, indicated
the map, are not the only ones which have occurred in Dub
since 1882; but, as the compulsory notification of infective diseas
has but lately come into operation in Dublin, I could only ascerta
the existence of cases by means of hospital returns, by the registration of deaths, and by the Reports made by poor law medica
officers.

I have placed in diagram form the facts relating to typhoi
fever distribution in Dublin:—

	Population of the City of Dublin by 1891 Census	Per cent.	No. of Persons affected by Typhoid Fever in 10 years ended 1891		Ratio of Cases to Population
			No.	Per cent.	
Living upon gravel soils	75,486	30·7	813	41	1 in 92·8
Living upon the clay -	169,615	69·3	1,167	59	1 in 145·3
Total - -	245,001		1,980	100	

On the clay a larger proportion of the cases occur over old water-courses which have been filled up with loose soils. In Dublin the gravel for the most part rests upon clay or rock which retains water.

On the whole, the distribution of typhoid fever in the suburbs resembles that described for the city. There is not much of the gravel in Clontaif, but upon it most of the cases in the district occur. The rate is as high as in the city, whilst the general and zymotic death-rates are lower. In the Report to the War Office on the sanitary condition of the Royal Barracks, Dublin, by Dr. Grimshaw, Registrar-General, and myself, we pointed out that typhoid fever prevailed where the gravel existed.

A main drainage scheme has recently been adopted by the Corporation, and operations relative thereto will soon be commenced. I have every hope that when in operation for some time it will materially lessen our typhoid fever death-rate.

Dublin is a city with an undue amount of typhoid fever in it. It is supplied with pure water drawn from a distant source. Its local wells have fallen into disuse. Its street sewers are as good as those in the English towns. Like other places its milk-supplies may be now and then infected with typhoid poison. In 1879 I found that 63 cases of typhoid fever—of which 6 proved fatal—were caused by using milk obtained from a particular dairy. The owner of the dairy and two of his children had fever; and their dejections were deposited on the manure heap close to the place where the cows were milked.

The prevalence of typhoid fever in Dublin in 1889 and 1891 was by many persons attributed to the use of oysters; and for a time so great was this oyster scare that the sale of the mollusc nearly died out. In Belfast the same idea prevailed, but not so generally. I may mention that at the meeting of the British Medical Association at Cambridge in 1881 I read a paper entitled "Sewage in Oysters," in which I pointed out the fact that sewage—which perhaps might contain the microbes of typhoid fever—was often present in oysters. I have repeatedly detected sewage in oysters taken from the shores of Dublin Bay. Oysters, cockles, mussels, and other lamellibranchiate molluscs are often eaten uncooked, and their shells enclose a liquid which is also often drank raw. Although oysters when deserted by the tide usually keep their valves closed, they do not invariably do so; and, therefore, at low water sewage trickling down the shore is likely to find its way into the interior of the oyster and other shell fish. I would prefer having oysters taken from the lonely coasts of Clare and Kerry than from the estuaries of rivers, which receive the filth of large towns.

It is possible that vegetables taken from an infected soil might be the vehicle of the disease. Salad, radishes, and other esculents are often brought into the house without having been separated from the soil in which they have been grown: if eaten without being perfectly washed they might introduce the microbe of typhoid fever into the body.

Although infected food may cause cases of typhoid fever in Dublin, it is not probable that they are more numerous there than elsewhere; we must, therefore, look for some other more common source of the disease than infected water, milk, and other foods. Of course the house-drains may be blamed for the prevalence of the disease. I examine, or cause to be examined, the sanitary condition of the houses in which it occurs; in a large proportion of them defects are detected, the traps are out of order, the drains are choked up with fats or other obstructions, or they consist of rubble—in short, the usual sanitary defects found in so many houses when carefully overhauled are detected in nearly half of the houses examined. On the other hand, the disease constantly makes its appearance in houses where no defects can be detected, where the "smoke test" shows no leak of drain or defect of trap, where the water-closets are of the most recent construction, and in good working order, and where the water is taken direct from high pressure taps. Again, the disease does not appear in houses in which for years the sanitary accommodation and drains have been imperfect.

It is admitted that there has been a great improvement during recent years in the construction of house drains, and the old "built" sewers have been all but completely replaced by earthenware pipes, laid in cement. As I have already stated, the zymotic death-rate has greatly declined, but still typhoid fever more than holds its own. I can only account for this by assuming that the microbes of the disease have established themselves in the soil, that they multiply therein, and that they issue occasionally from it into the atmosphere, which, consequently, becomes infected. It is only in this way that we càn reasonably account for the periodic character of the disease, for its seasonal intensity, for its epidemics. It may be said as against this view that we have epidemics of small-pox, scarlet fever, measles, and so on; but these diseases are directly communicable from person to person, whereas that is not the case with typhoid fever. The w.c.s, house drains, and street-sewers do not vary much from year to year, and when they do vary it is generally because they are improved. In the soil, therefore, we must look for the cause of the endemicity of typhoid fever in Dublin and in other places. This theory is greatly strengthened by the fact that the porous soils are to a much greater extent likely to be the habitat of the organism than the stiff clays. The conditions of existence for all kinds of organisms are more favourable in loose soils than in adhesive dense clays, in which air cannot freely circulate. The action of strong winds, and the rising and sinking of underground water, more readily cause movements of air in gravels and loose soils than in clays; and the escape of microbes from the former under such circumstances must the more freely occur. The streets of Dublin have lately been to a large extent paved with stone setts, which circumstance may, perhaps, account to some extent for the increase of typhoid fever. The underground air cannot now diffuse into the atmosphere over the roadway, and therefore may be drawn in larger quantities into the houses, the basement floors of which are rarely concreted.

The question—how do the microbes of typhoid fever ascend from the soil into the atmosphere? is one that cannot be answered off-hand. Vegetable organisms that exist in the superficial layers of soil are easily detached by strong winds, and carried into the air. The malarial poison, which is clearly derived from the soil, can be transferred to the air; but probably it exists on or near the surface. If the typhoid bacillus is deep-seated amidst the decomposing organic matter of the soil, it can only with difficulty reach the surface. So long as the ground is thoroughly wet the organisms will remain there. When the upper layers of soil become quite dry, the organisms in them undergo a species of desiccation, and in that state they are easily transportable to the air by the agency of the forces acting upon the subterranean atmosphere to which I have already referred. When they are completely desiccated, they are probably innocuous; but they may sometimes reach the air without being deprived of all their moisture. The spores of the bacillus may also, from their extreme minuteness and lightness, be carried up from the soil by air-currents.

Hoffmann[a] has pointed out that there is in porous soils what he terms a superficial zone of evaporation, in which the moisture varies from saturation to zero. In the hot summer weather the zone is considerable in extent, and when rain descends on it, after a period of heat and drought, it is often capable of retaining the whole of the water without its lower border becoming wet. In such there is always a dry layer between the surface part, which is temporarily wetted by the rain, and the deeper strata in which the water lies. Under these conditions the impurities which reach the soil become deposited in the dry zone; under this zone is situated a layer which is always wet. When the upper zone is filled with rain the amount of water in the second zone remains constant, for any excess which it may receive passes down into the third zone, or that of the underground water. If the typhoid bacillus exists in the first zone, it must alternately be immersed in water and in air. In the former case it remains in the soil, in the latter it may be transported to the atmosphere by air-currents. The deeper the ground-water sinks, the greater will be the extent of the zone in which the movements of organisms can take place; but even whilst the ground-water is sinking, the outermost layer of soil may be kept moist by slight and long-continued rain. In this case, however large the dry zone, none of its organisms would escape from it into the air.

During the winter and early months of the year the surface soil, and often all the layers beneath it, are so wet that but few, if any, organisms can escape from it. There is very little difference in Dublin between the rainfall of the different quarters of the year, but in the summer the water which falls upon the ground is not only carried off by drainage, but it is largely evaporated. In the latter part of summer, and in the autumn, the superficial layers of soil often become sufficiently dry to permit of the passage through them of micro-organisms. The autumn and early winter are the periods during which typhoid fever attains its maximum, and the majority of writers on the subject agree that the disease often becomes epidemic after an unusually hot and dry summer.

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[a] Archiv für Hygiene. Vols. I. and II. Part II.

I admit that the chances of detaching micro-organisms from moist surfaces are slight, but it must occur now and again. Those of typhoid fever have not, I believe, been detected yet in the atmosphere, but pus organisms and the microbes of diphtheria have.

A very fascinating theory is that which assumes that the micro-organisms which cause disease are saprophytes which have acquired, under at present unknown conditions, toxic properties. This theory fits in better with our knowledge of malaria and typhoid fever than with that of most of the other zymotic diseases. It would, perhaps, account for the great variety of forms which the disease assumes. In the United States of America malarial fevers are lessening because the cultivation of the soil is extending; but the increase of population in that country is producing a greater development of typhoid fever. There are cases of fever met with constantly which almost resemble typhoid fever, but still have some points of resemblance to malaria, and *vice versa*. Lomstaud-Chatenet[a] has described some remarkable cases of typhoid fever which seem to have had a malarial origin.

There is quite a literature of the so-called typho-malarial fever, which one can hardly peruse without coming to the conclusion that at least in the ætiology of typhoid fever and of malaria there are very striking analogies. New arrivals in a country where malaria exists are the least likely to escape. The same observation in reference to typhoid fever has been mentioned by Murchison. In India the young soldiers on their arrival are peculiarly liable to contract the disease.

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[a] Sur la forme palustre de la fièvre typhoïde. Paris. 1870.

(*To be continued.*)

PART IV.

MEDICAL MISCELLANY.

Reports, Transactions, and Scientific Intelligence.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

President—George H. Kidd, M.D., F.R.C.S.I.
General Secretary—W. Thomson, F.R.C.S.I.

SECTION OF MEDICINE.

President—J. Magee Finny, M.D.; President of the Royal College of Physicians of Ireland.
Sectional Secretary—A. N. Montgomery, M.R.C.P.I.

Friday, April 22, 1892.

Dr. J. Hawtrey Benson in the Chair.

The Desirability of Operative Interference in Suspected Perforation of Chronic Ulcer of the Stomach.

Dr. Parsons read a paper on the desirability of operative interference in suspected perforation of chronic ulcer of the stomach. [It will be found at page 26.]

Mr. M'Ardle said that Dr. Parsons must not contrast operations for injury, pelvic abscess, or ruptured ovarian cyst, with that for chronic perforations, since in these cases (as in one of those mentioned in this paper) the margin of the perforation is so soft that sutures will not hold, while in those cases of injury the edges of the wound are healthy and permit of suture. The other cases do not interfere materially with vital organs, and so should not be brought into the question. It is doubtful if Lembert's suture will ever be found effectual in closing perforating ulcers of the stomach, and the delay occasioned by the application of this suture would in itself prove fatal to a patient already in a state of collapse. It seemed to the speaker that the introduction of a large bone plate through the stomach wound, sutures from this plate through the stomach wall, and out through the anterior abdominal wall, would secure the stomach forwards, thus establishing a fistula. This operation would occupy from 20 to 30 minutes, as in similar operations on the intestines, while resection of the edges of the ulcer and suture after Lembert's method must occupy a time sufficient to prevent a favourable result. Should we succeed in reducing the time required for the operation, and should the cases come under treatment before exhaustion or sepsis occurs, such success may be hoped for as attends laparotomy for other than perforative peritonitis.

Dr. O'Carroll agreed that, in cases which can be certainly diagnosticated as cases of perforation of stomach, operation is desirable. But it was inevitable that a large number of abdominal sections would be done without finding the perforation, and still more without being able to do anything of advantage to the patient. There were difficulties in diagnosis which had yet to be got over—namely, the recognition of perforation in cases in which a false stomach has been formed by peritoneal adhesions, and in which the fatal perforation has occurred, and the differentiation of gastric perforation from many cases of acute and subacute gastritis simulating it. Of course there remains the wider difficulty of being sure that the perforation is a gastric one at all.

Dr. Walter Smith alluded to the grave responsibility which now so often devolves upon the physician of advising for or against operative interference in cases of acute intra-abdominal inflammation. Speaking from his own experience, he could confidently say that in no single case, even when the issue was fatal, had he reason to regret having called for surgical intervention.

Dr. J. W. Moore agreed with Dr. Walter Smith in his views as to the interdependence of medicine and surgery, but was glad to observe that, while thus expressing himself, Dr. Smith was careful to avoid any suggestion that a physician should practise surgery or a surgeon medicine. Dr. Moore recalled how closely the subjective sensations of improvement experienced by the victim of perforation after some hours resembled the mental state, amounting to euthanasia, often observed in those dying of malignant smallpox of the purpuric or hæmorrhagic variety. The success of laparotomy in cases of perforation in enteric fever was very encouraging. Up to the close of November, 1891, 19 cases with 4 recoveries had been recorded. This represented a percentage of recovery of more than 20 per cent—no small gain in the case of the most perilous of all the complications of enteric fever.

Dr. C. F. Moore could not say whether present experience throws any light in the way of comparative pathology on the question of peritonitis from injuries or disease. He had once examined the abdomen of a ten-foot crocodile and found there several stones encapsuled in fibrous tissue and hanging thereby from different parts of the alimentary canal. Some of these foreign bodies were as large as a small closed fist, and had evidently been extruded without injuring the health of the animal.

Dr. Parsons replied.

Detachment of Retina.

Mr. Story read notes of three cases of detached retina in myopic eyes, which had either partially or completely recovered. In one case complete cure had taken place after rest in bed with bandaging and the use of atropin drops. In the second a permanent improvement had resulted from similar treatment, leaving a useful eye, which had now existed for 14 years. In the third the detachment was complicated with keratitis punctata and glaucoma, and subsided completely seven weeks after the operation of sclerotomy.

Mr. Swanzy stated that Mr. Story's experience of the treatment of detached retina coincided very much with his own. A case of the disease does occasionally get well under treatment, or seem to do so. It is, however, a question, whether the treatment has had much to do with the case. A lady consulted Mr. Swanzy some years ago, and being unable to place herself under the lengthened treatment required, returned home to the country. After a year she presented herself again, when Mr. Swanzy found that the detachment had quite gone back and the eye was perfectly normal. Treatment, therefore, may have little to do with the apparent cures by any of the various methods proposed.

The Section then adjourned.

SECTION OF SURGERY.

President—H. G. Croly, President of the Royal College of Surgeons in Ireland.

Sectional Secretary—R. L. Swan, F.R.C.S.I.

Friday, May 20, 1892.

Sir W. Stokes in the Chair.

Trephining in Cerebral Meningitis.

Mr. M'Ardle read his paper entitled "Trephining in Cerebral Meningitis." [It will be found at page 17.]

The Chairman (Sir William Stokes) observed that, in his opinion, Mr. M'Ardle's communication was one of great importance in connection with the subject of brain surgery, which for some years has been, and still is, engaging the attention of surgeons. He agreed with Mr. M'Ardle's remarks in reference to the operation of trephining acting as a preventive measure to the occurrence of inflammatory troubles subsequently supervening. His experience goes a long way to confirm the views of the older surgeons in reference to the value of trephining as a means of preventing inflammatory complications after cranial injuries. Mr. M'Ardle's remarks as to the necessity of accurately determining by careful measurements the appropriate situation where the operation should be performed were of the greatest importance.

Mr. Tobin referred to a case somewhat similar to that of Mr. M'Ardle's, in which he got a successful result after trephining and draining away a quantity of serum underlying the dura mater, and gave it as his opinion that tubercular meningitis might, in a considerable number of cases, be successfully treated if they were freely drained at an early stage.

Mr. J. H. Scott said two minor points in this case appear of some importance. First, why was mercury administered? He considered mercury had no effects on any inflammatory effusions except those of a syphilitic origin. Secondly, the apparent osseous closure of the trephine opening without replacement of the removed bone. He thought it probable the osseous development was due to some of the superficial osteoclasts adhering to the detached dura mater.

Mr. M'Ardle was sorry that he could not elicit an explanation of the change of pulse noted by Mr. Patteson. The speaker's opinion was that the working of the trephine stimulated those centres which the pressure of the fluid prevented from action without strong stimulation. In the case detailed by Mr. Tobin the chief symptoms were the same as in the case noted, but the deviation of the eyes was in the opposite direction. The difference is easily explained in Mr. Tobin's case—the pressure was not sufficient to check the action of the centres on the injured side, but the irritation of these centres would have the effect noted. Mr. M'Ardle, replying to Mr. Scott, said he used mercury in this case because in very many non-syphilitic inflammations, meningeal and otherwise, great benefit resulted. In reply to Mr. Cox, Mr. M'Ardle said he would not operate on cases in which the meningeal trouble was secondary to some rapidly-progressing fatal affection, or in chronic alcoholism where fibroid degeneration of important organs was present. The speaker begged to thank Sir William Stokes for his support of the opinion that trephining should have been tried in the first case related.

Electrolysis in Affections of the Male Urethra.

Dr. Pearson read a paper on the uses of electrolysis in affections of the male urethra.

(1.) Introduction to the subject of urethral electrolysis.
(2.) Description of apparatus required for its employment.
(3.) Description of its method of employment in cases of gleet, stricture, &c.
(4.) History of seven cases subjected to electrolytic treatment.

(5.) Deductions from its employment in these cases.

(6.) General conclusions regarding its uses.

Sir William Stokes congratulated the author on the interest and importance of his communication. He could not, however, endorse what had fallen from the author in reference to the permanence of the cure of stricture by electrolysis. In fact, in Sir W. Stokes' opinion, after no method of treatment can it be honestly said that a cure has been effected, and in his experience a return was just as likely to occur as after the treatment by internal or external division or gradual dilatation. In the treatment of gleet, Sir W. Stokes thought that Dr. Pearson's experience should stimulate surgeons to give it a full trial.

Mr. Thomson said he had used the method described by Dr. Pearson in gleet with success. But his experience in stricture was not satisfactory, and he had not pursued the treatment. He was acquainted with Dr. Newman's claims, and the work that had been done by Dr. Steavenson. But if the treatment was so successful as was claimed, was it not curious that all surgeons the world over did not adopt it. The question was really—Was stricture of the urethra curable? He (Mr. Thomson) had never seen a case where, no matter what method was adopted, he was able to say to a patient: You are cured—that is, that the person could go on without the periodical use of a bougie. He had never met anyone who claimed such a result. Was it attainable by electrolysis? If it was, they ought all to adopt this plan, but until such a claim could be substantiated he did not think that electrolysis had any advantage over some of the simpler methods.

Mr. Swan said that, for his part, he did not believe in the permanent cure of stricture by electrolysis, no more than he believed in the same result by Holt's method, by gradual dilatation, or by any form of urethrotomy. He remembered, when Holt's method was in fashion, it was thought that stricture was at last conquered. Many persons, he believed, were Holted (if he might use the term) who never had stricture. Only last month he had used Maisonneuve's instrument on a gentleman, the possessor of a tight stricture, who had been cured for a time by electrolysis.

Mr. M'Ardle said the only experience he had of this treatment for stricture was that he had been obliged to use Maisonneuve very frequently on cases of so-called cures by electricity. As to the good effect of the application of the electric current to patches of granular urethritis and small patches of ulceration, there can be no doubt, and if large leaden electrodes, carefully guarded, were used, the healing should be more rapid.

Mr. Tobin said the question of the permanent cure of stricture by electrolysis resolves itself into this—Can electrolysis cause the disappearance of cicatricial tissue? His opinion was that it cannot. However, on hearing the excellent paper just read, he should again try; and the case he should select would be one of stricture at the orifice of the urethra. If it then succeeds, if it causes the disappearance of a stricture that he could see, then he should believe in it, and extend its application to all cases that he met with.

The Section then adjourned.

SIMPLE URINARY TESTS.

DR. AUSTIN FLINT writes (*Medical News*, Philadelphia, Jan. 9th, 1892):—"I have had constructed a tube, with an arbitrary graduation up to 100. In a test-tube of convenient size, I boil a little more than half a fluid-ounce of urine, to which have been added four or five drops of ordinary acetic acid. If the urine be turbid, it may be filtered before being boiled. After thorough boiling and allowing the urine to cool for two or three minutes, it should be well shaken, in order to divide the precipitated albumen as finely as possible, and then the graduation tube is filled to the 100 mark. After 12 hours' standing the percentage of precipitate is noted. The albumen will settle in twelve hours, and the volume of the deposit is not sensibly diminished if it be allowed to stand for twenty-four hours. The proportion of albumen measured in this way should be called *the percentage in volume of undried albumen*. This method is not exactly accurate, but it is sufficiently so for ordinary purposes. It will indicate fairly well a proportion of 1 or 2 per cent. of albumen. When the proportion is less than 1 per cent., the ordinary method by contact or by simple boiling with a few drops of acetic acid would indicate 'a trace' of albumen. While writing upon this subject, I am led to describe a simple apparatus for detecting the presence of sugar in the urine, when the results of Fehling's test are uncertain. A small straight bottle or a small test-tube is fitted with a cork, through which is passed a small tube that reaches nearly to the bottom. The glass tube is bent so that the apparatus will hang over an ordinary test-tube or other convenient vessel. The bottle is completely filled with urine, with which a piece of Fleischmann's yeast, about the size of a pea, has been thoroughly mixed. In putting in the cork, it is necessary to be careful to exclude every bubble of air. If the apparatus be kept for a half hour at a temperature of from 80° to 90° F., a bubble of gas will appear if sugar be present in the smallest quantity. The apparatus may be placed in the sun or near a heater, but the temperature should not be higher than 100°. This is valuable as a negative test. In case of doubt I have often been able to determine absolutely the presence or absence of sugar before I had finished taking the history."

SANITARY AND METEOROLOGICAL NOTES.

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Vital Statistics

For four Weeks ending Saturday, May 21, 1892.

The deaths registered in each of the four weeks in the sixteen principal Town Districts of Ireland, alphabetically arranged, corresponded to the following annual rates per 1,000:—

Towns	Weeks ending				Towns	Weeks ending			
	April 30.	May 7.	May 14.	May 21.		April 30.	May 7.	May 14.	May 21.
Armagh -	0·0	0·0	7·0	21·0	Limerick -	32·3	25·3	19·6	15·4
Belfast -	26·1	29·3	28·3	23·6	Lisburn -	12·8	21·4	34·3	4·3
Cork -	33·2	30·4	22·1	27·7	Londonderry	25·1	11·0	26·7	15·7
Drogheda	79·1	22·0	39·5	13·2	Lurgan -	22·8	31·9	22·8	31·9
Dublin -	42·8	32·1	29·7	33·3	Newry -	44·3	12·1	8·1	20·1
Dundalk -	12·6	4·2	8·4	12·6	Sligo -	36·1	67·0	36·1	87·7
Galway -	22·7	15·1	22·7	26·4	Waterford -	20·0	17·5	40·0	10·0
Kilkenny	4·7	23·6	33·0	28·3	Wexford -	58·7	31·6	31·6	45·2

In the week ending Saturday, April 30, 1892, the mortality in thirty-three large English towns, including London (in which the rate was 19·8), was equal to an average annual death-rate of 20·8 per 1,000 persons living. The average rate for eight principal towns of Scotland was 21·3 per 1,000. In Glasgow the rate was 23·8, and in Edinburgh it was 21·4.

The average annual death-rate represented by the deaths registered during the week in the sixteen principal town districts of Ireland was 33·9 per 1,000 of the population (unrevised) according to the recent Census.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 3·9 per 1,000, the rates varying from 0·0 in eight of the districts to 16·1 in Newry—the 11 deaths from all causes registered in that district comprising 4 from whooping-cough. Among the 128 deaths from all causes registered in Belfast are 8 from measles (a decrease of 10 as compared with the number for the preceding week), 1 from scarlatina, 1 from whooping-cough, 1 from diphtheria, 2 from enteric fever, and 1 from diarrhœa. The 48 deaths in Cork comprise 4 from measles, 2 from typhus, and 2 from whooping-cough. The 18 deaths in Drogheda comprise 2 from typhus and 1 from enteric fever.

In the Dublin Registration District the registered births amounted to 246—131 boys and 115 girls; and the registered deaths to 294—127 males and 167 females.

The deaths, which are 101 over the average number for the corresponding week of the last ten years, represent an annual rate of mortality of 43·9 in every 1,000 of the population. Omitting the deaths (numbering 7) of persons admitted into public institutions from localities outside the district, the rate was 42·8 per 1,000. During the first seventeen weeks of the current year the death-rate averaged 37·8, and was 6·0 over the mean rate in the corresponding period of the ten years 1882–1891.

The number of deaths from zymotic diseases registered is 37, being 13 in excess of the average for the corresponding week of the last ten years, but 18 under the number for the week ended April 23. The 37 deaths comprise 20 from measles (being 13 under the number from that cause for the preceding week), 1 from influenza, 11 from whooping-cough, 1 from diphtheria, 1 from enteric fever, and 1 from dysentery.

Eighty-six cases of measles were admitted to hospital, being 13 in excess of the admissions for the preceding week, but 3 under the number for the week ended April 16. Sixty-seven measles patients were discharged, 3 died, and 190 remained under treatment on Saturday, being 16 over the number in hospital at the close of the preceding week.

The hospital admissions for the week include, also, 4 cases of enteric fever and two cases of scarlatina, but no cases of typhus were received. Twenty-two cases of enteric fever, 13 of scarlatina, and 1 of typhus remained under treatment in hospital on Saturday.

Deaths from diseases of the respiratory system amount to 86, being 40 over the number for the preceding week, and 46 in excess of the average for the 17th week of the last ten years. They comprise 27 from bronchitis, 37 from pneumonia or inflammation of the lungs, 2 from croup, and 2 from pleurisy.

In the week ending Saturday, May 7, the mortality in thirty-three large English towns, including London (in which the rate was 18·9), was equal to an average annual death-rate of 19·7 per 1,000 persons living. The average rate for eight principal towns of Scotland was 21·4 per 1,000. In Glasgow the rate was 23·7, and in Edinburgh it was 17·3.

The average annual death-rate in the sixteen principal town districts of Ireland was 28·5 per 1,000 of the population (unrevised) according to the recent Census.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 5·5 per 1,000, the rates varying from 0·0 in nine of the districts to 15·5 in Sligo—the 13 deaths from all causes registered in that district comprising 1 from simple continued fever and 2 from diarrhœa. Among the 144 deaths from all causes registered in Belfast are 21 from measles (an increase of 13 as compared with the number for the preceding week), 1 from scarlatina, 5 from whooping-cough, 2 from diphtheria, 1 from simple continued fever, 2 from enteric fever, and 3 from diarrhœa. The 44 deaths in Cork comprise 1 from measles, 1 from typhus, and 3 from whooping cough. The 5 deaths in Drogheda comprise 2 from typhus.

In the Dublin Registration District the registered births amounted to 193—106 boys and 87 girls; and the registered deaths to 221—105 males and 116 females.

The deaths, which are 28 over the average number for the corresponding week of the last ten years, represent an annual rate of mortality of 33·0 in every 1,000 of the population. Omitting the deaths (numbering 6) of persons admitted into public institutions from localities outside the district, the rate was 32·1 per 1,000. During the first eighteen weeks of the current year the death-rate averaged 37·5, and was 5·9 over the mean rate in the corresponding period of the ten years 1882–1891.

Fifty-three deaths from zymotic diseases were registered, being 33 in excess of the average for the corresponding week of the last ten years, and 16 over the number for the week ended April 30. They comprise 40 from measles (being 20 over the number from that cause for the preceding week), 2 from influenza and its complications, 4 from whooping-cough, 1 from diphtheria, and 2 from diarrhœa.

The number of cases of measles admitted to hospital is 57, being a decline of 29 as compared with the admissions for the preceding week, and 16 below the admissions for the week ended April 23. Sixty-eight measles patients were discharged, 5 died, and 174 remained under treatment on Saturday, being 16 under the number in hospital at the close of the preceding week.

The hospital admissions for the week include, also, 4 cases of enteric fever, 4 of scarlatina, and 2 cases of typhus. Twenty-one cases of enteric fever, 16 of scarlatina, and 3 of typhus remained under treatment in hospital on Saturday.

Deaths from diseases of the respiratory system, which had risen from 46 for the week ended April 23, to 86 for the following week, fell again to 46, but this number is 4 over the average for the corresponding week of the last ten years, The 46 deaths comprise 23 from bronchitis, 18 from pneumonia or inflammation of the lungs, and 1 from pleurisy.

In the week ending Saturday, May 14, the mortality in thirty-three large English towns, including London (in which the rate was 19·5), was equal to an average annual death-rate of 20·4 per 1,000 persons living. The average rate for eight principal towns of Scotland was 22·8 per 1,000. In Glasgow the rate was 27·6, and in Edinburgh it was 21·0.

The average annual death-rate represented by the deaths registered in the sixteen principal town districts of Ireland was 27·7 per 1,000 of the unrevised population based on the Census of 1891.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 3·5 per 1,000, the rates varying from 0·0 in ten of the districts to 5·2 in Sligo—the 7 deaths from all causes registered in that district comprising 1 from simple continued fever, Among the 139 deaths from all causes registered in Belfast are 14 from measles (a decline of 7 as compared with the number for the preceding week), 8 from whooping-cough, 2 from diphtheria, 1 from simple continued fever, 3 from enteric fever, and 2 from diarrhœa. The 32 deaths in Cork comprise 2 from measles.

In the Dublin Registration District the registered births amounted to 220—113 boys and 107 girls; and the registered deaths to 208—92 males and 116 females.

The deaths, which are 18 over the average number for the corresponding week of the last ten years, represent an annual rate of mortality of 31·0 in every 1,000 of the population. Omitting the deaths (numbering 9) of persons admitted into public institutions from localities outside the district, the rate was 29·7 per 1,000. During the first nineteen weeks of the current year the death-rate averaged 37·2, and was 5·7 over the mean rate in the corresponding period of the ten years 1882–1891.

The number of deaths from zymotic diseases registered is 38, being 19 in excess of the average for the corresponding week of the last ten years, but 15 under the number for the week ended May 7. The 38 deaths comprise 24 from measles (being 16 under the number from that cause in the preceding week), 2 from influenza and its complications, 8 from whooping-cough, 1 from enteric fever, and 1 from diarrhœa.

Fifty-eight cases of measles were admitted to hospital, being one over the admissions for the preceding week, but 28 below the admissions for the week ended April 30. Sixty-six measles patients were discharged, 6 died, and 160 remained under treatment on Saturday, being 14 under the number in hospital at the close of the preceding week.

The hospital admissions for the week include, also, 3 cases of enteric fever, 4 of scarlatina and 1 of typhus. Fifteen cases of enteric fever, 14 of scarlatina, and 4 of typhus remained under treatment in hospital on Saturday.

Deaths from diseases of the respiratory system amount to 48, being 2 over the number for the preceding week, and 11 above the average for the 19th week of the last ten years. The 48 deaths consist of 25 from bronchitis, 20 from pneumonia or inflammation of the lungs, 2 from pleurisy, and 1 from croup.

In the week ending Saturday, May 21, the mortality in thirty-three large English towns, including London (in which the rate was 19·4), was equal to an average annual death-rate of 19·3 per 1,000 persons living. The average rate for eight principal towns of Scotland was 21·5 per 1,000. In Glasgow the rate was 26·8, and in Edinburgh it was 13·9.

The average annual death-rate in the sixteen principal town districts of Ireland was 27·4 per 1,000 of the population (unrevised) according to the recent Census.

The deaths from the principal zymotic diseases registered in the sixteen districts were equal to an annual rate of 4·3 per 1,000, the rates varying from 0·0 in eight of the districts to 4·9 in Belfast—the 116 deaths from all causes registered in that district comprising 13 from measles (a decrease of 1 as compared with the number for the preceding week), 1 from scarlatina, 2 from whooping-cough, 1 from simple continued fever, 5 from enteric fever, and 2 from diarrhœa. Among the 40 deaths from all causes registered in Cork are 4 from measles and 1 from enteric fever. The 11 deaths in Limerick comprise 1 from typhus and 1 from whooping-cough. The 10 deaths in Londonderry comprise 2 from whooping-cough.

In the Dublin Registration District the registered births amounted to 181—100 boys and 81 girls; and the registered deaths to 232—109 males and 123 females.

The deaths, which are 58 over the average number for the corresponding week of the last ten years, represent an annual rate of mortality of 34·6 in every 1,000 of the population. Omitting the deaths (numbering 9) of persons admitted into public institutions from localities outside the district, the rate was 33·3 per 1,000. During the first twenty weeks of the current year the death-rate averaged 37·1, and was 5·9 over the mean rate in the corresponding period of the ten years 1882–1891.

Forty-four deaths from zymotic diseases were registered, being 23 in excess of the average for the corresponding week of the last ten years, and 6 over the number for the week ended May 14. The 44 deaths comprise 28 from measles (being 4 over the number from that cause in the preceding week), 1 from typhus, 4 from influenza and its complications, 3 from whooping-cough, 4 from diarrhœa, and 1 from dysentery.

Seventy-three cases of measles were admitted to hospital, being 15 over the admissions for the preceding week, and 16 over the number for the week ended May 7. Sixty-seven measles patients were discharged, 3 died, and 163 remained under treatment on Saturday, being 8 over the number in hospital at the close of the preceding week.

The hospital admissions for the week include, also, 3 cases of enteric fever, 3 of scarlatina, and one of typhus. Eighteen cases of enteric fever, 17 of scarlatina, and 4 of typhus remained under treatment in hospital on Saturday.

Deaths from diseases of the respiratory system amount to 45, being 12 in excess of the average for the 20th week of the last ten years, but 3 below the number for the preceding week. The 45 deaths comprise 25 from bronchitis and 15 from pneumonia or inflammation of the lungs.

METEOROLOGY.

Abstract of Observations made in the City of Dublin, Lat. 53° 20′ *N., Long.* 6° 15′ *W., for the Month of May,* 1892.

Mean Height of Barometer,	29·944 inches.
Maximal Height of Barometer (on 12th, at 9 a.m.),	30·381 „
Minimal Height of Barometer (on 28th, at 9 p.m.)	29·474 „
Mean Dry-bulb Temperature,	52·9°.
Mean Wet-bulb Temperature,	49·3°.
Mean Dew-point Temperature,	45·7°.
Mean Elastic Force (Tension) of Aqueous Vapour,	·310 inch.
Mean Humidity,	77·0 per cent.
Highest Temperature in Shade (on 25th)	69·5°.
Lowest Temperature in Shade (on 5th),	37·9°.
Lowest Temperature on Grass (Radiation) (on 5th),	31·5°.
Mean Amount of Cloud,	59·9 per cent.
Rainfall (on 19 days),	4·177 inches.
Greatest Daily Rainfall (on 28th),	2·056 inches
General Directions of Wind,	W.S.W., E.N.E

Remarks.

A generally favourable though changeable month. At first dry, cold, and bright; afterwards warm but unsettled, with frequent showers or even heavy rains, and strong southwesterly winds. After the 12th, rain fell almost daily. On the 28th there was an extraordinary downpour, lasting 6 hours, within which space of time 1·9 inches of rain fell in Dublin, or at the rate of 7·6 inches in 24 hours. The total rainfall of the 28th was 2·056 inches, or nearly one-half that of the whole month.

In Dublin the arithmetical mean temperature (53·8°) was decidedly above the average (52·0°); the mean dry bulb readings at 9 a.m. and 9 p.m. were 52·9°. In the twenty-seven years ending with 1891, May was coldest in 1869 (M. T. = 48·2°), in 1885 (M. T. = 48·7°), and in 1879 (the "cold year") (M. T. = 48·8°). It was warmest in 1868 (the "warm year") (M. T. = 55·8°, and 1875 (M. T. = 54·9°). In 1886 the

M. T. was 50·5°, in 1887 it was 51·8°, in 1888 it was 52·5°, in 1889 it was 54·6°, in 1890 it was 53·2°, and in 1891 it was only 49·6°.

The mean height of the barometer was 29·944 inches, or 0·045 inch below the corrected average value for May—namely, 29·989 inches. The mercury rose to 30·381 inches at 9 a.m. of the 12th, and fell to 29·474 inches at 9 p.m. of the 28th. The observed range of atmospherical pressure was, therefore, 0·907 inch—that is, a little more than nine-tenths of an inch.

The mean temperature deduced from daily readings of the dry bulb thermometer at 9 a.m. and 9 p.m. was 52·9°, or 7·6° above the value for April, 1892. Using the formula, *Mean Temp.* = *Min.* + (*max.*—*min.* × ·47), the value was 53·3°, or 1·7° above the average mean temperature for May, calculated in the same way, in the twenty-five years, 1865–89, inclusive (51·6°). The arithmetical mean of the maximal and minimal readings was 53·8°, compared with a twenty-five years' average of 52·0°. On the 25th the thermometer in the screen rose to 69·5°—wind, W.S.W.; on the 5th the temperature fell to 37·9°—wind, N.E. The minimum on the grass was 31·5° also on the 5th.

The rainfall amounted to 4·177 inches, distributed over 19 days. The average rainfall for May in the twenty-five years, 1865–89, inclusive, was 2·030 inches, and the average number of rainy days was 15·4. The rainfall and the rainy days, therefore, were much above the average. In 1886 the rainfall in May was very large—5·472 inches on 21 days; in 1869 also 5·414 inches fell on 19 days. On the other hand, in 1871, only ·378 of an inch was measured on 9 days; in 1876 only ·798 of an inch fell on 6 days; in 1887 only ·882 of an inch fell on 10 days; and in 1888 only ·978 of an inch on 11 days. In 1890, 2·438 inches fell on 17 days. In 1891 May was the first month in which the rainfall exceeded the average. It amounted to 2·792 inches on 17 days.

Solar halos were seen on the 17th, 24th, and 27th. High winds were noted on as many as 11 days, attaining the force of a gale, however, on only one occasion—namely, the 16th. Hail fell on the 16th. No thunder or lightning occurred in Dublin.

During the month the thermometer in the screen did not fall below 32°, but on four nights a temperature of 32° or less was recorded on the grass. The mean minimal temperature on the grass was 41·3°, compared with 37·7° in May, 1891, 42·2° in 1890, 42·4° in 1889, 37·5° in 1888, and 37·9° in 1887.

During the week ended Saturday, the 7th, while an abundant rainfall was experienced over the greater part of the British Islands between Monday and Wednesday, there was little spring growth owing to a persistence of northeasterly winds and low temperatures, both by day and by night. At the beginning and close of the week gradients for westerly (S. to W. and N.W.) winds existed and the weather was comparatively mild; but from Monday to Friday inclusive the highest atmospherical pressure was found to the N. and N.W., while a series of depressions alternately formed and dispersed along a trough of low pressure extending northeastwards from the Bay of Biscay to the Baltic. Hence, the cold northeast winds already referred to. On Sunday, the 1st, the weather was unsettled in Ireland and a heavy fall of rain occurred in the S. (0·95 inch at Roche's Point). On Monday night rain set in with N.E. winds in Dublin, 0·476 inch falling between 9 p.m. of this day and Wednesday morning. There was alternate cloud and sunshine from this time to the end of the week, but no rain fell in Dublin. The mean height of the barometer was 30·034 inches, pressure varying between 29·784 inches at 9 p.m. of Sunday (wind, S.E.) and 30·253 inches at 9 a.m. of Friday (wind, E.). The corrected mean temperature was 46·7°. On Saturday the screened thermometers rose to 58·7°, having fallen to 37·9° on Thursday. The mean dry bulb reading at 9 a.m. and 9 p.m. was 46·9°. Rain fell on two days to the total amount of ·476 inch, of which ·316 inch was measured on Monday. The prevailing wind was N.E. A sharp frost occurred on Friday night over S.E. England, the thermometer falling in the screen to 26° at Cambridge and to 29° even in London.

Taken as a whole, the weather of the week ended Saturday, the 14th, was favourable. Until Thursday, it was settled and quiet—warm sunny days alternating with sharp, hazy nights. On Thursday the sky became overcast with cirro-stratus and cumulus in Ireland and the atmosphere grew close and oppressive. In the afternoon a copious fall of warm rain set in all over this country, literally changing the face of nature through the impetus it gave to vegetation. Friday was a breezy, dull, rainy day, while Saturday proved bright with fresh to strong westerly winds. The rainfall of Thursday and Friday was general throughout Ireland; in Scotland rain also fell generally but in smaller quantities; but in England the weather remained fair and dry until Friday, when the showers became tolerably general except in the extreme S.W. of that country. In Dublin the mean height of the barometer was 30·186 inches, pressure ranging between 30·381 inches at 9 a.m. of Thursday (wind, E.) and 30·002 inches at 9 p.m. of Saturday (wind, W.). The corrected mean temperature was 53·7°. The mean dry bulb temperature at 9 a.m. and 9 p.m. was also 53·7°. The thermometer in the shade rose to 68·9° on Thursday and fell to 39·2° on Monday. The rainfall amounted to ·618 inch on three days, ·479 inch being entered to Thursday. An almost total eclipse of the moon (953 out of 1,000 parts being eclipsed) was well seen on Wednesday night. Easterly winds prevailed until Thursday. Then the winds became S.W. to W.

All through the week ended Saturday, the 21st, the weather—in Ireland especially—remained in a very changeable, showery, rough and cool condition. In the south of England it was finer and drier, while the northern part of that country and Scotland also experienced very variable weather. This state of things was brought about by the passage eastwards across our northern districts of a succession of depressions, of no great depth indeed, whereas an area of high pressure hung over the Bay of Biscay and France. Hence strong, squally westerly (S.W. to N.W.) winds and frequent showers prevailed, Ireland coming in for the brunt of the bad weather as it swept in from the Atlantic. In Dublin rain was measured on six out of the seven days, and the showers were particularly heavy on Monday, Wednesday, and Thursday. A brief spell of fair weather set in on Friday afternoon, but the showers were renewed on Saturday afternoon after a very sharp night. The weather was highly favourable from an agricultural point of view. In Dublin the mean height of the barometer was 29·900 inches, pressure ranging between 29·644 inches at 9 a.m. of Monday (wind W., blowing a moderate gale) and 30·080 inches at 9 p.m. of Friday (wind, W.N.W.). The corrected mean temperature was 52·9°. The mean dry bulb temperature at 9 a.m. and 9 p.m. was 52·3°. The screened thermometers rose to 61·8° on Wednesday and fell to 40·4° on Saturday. The rainfall was ·579 inch, of which ·228 inch fell on Thursday. Hail fell on Monday, when also there was a moderate westerly gale. The prevailing winds were westerly.

During the week ended Saturday, the 28th, except on Sunday and Monday, when the area of least atmospherical pressure was found over Sweden and the Baltic, the barometer was lowest over the Bay of Biscay, the British Islands, and the Atlantic Ocean. Hence gradients for southerly winds prevailed and the weather was kept in a changeable showery state, particularly in Ireland and Scotland. The southerly winds brought a great rise of temperature to France, Germany, and England, where the weather remained chiefly fine and dry until Wednesday, when a succession of thunderstorms began. On this day, the thermometer rose to 90° in Paris and to 91° at Biarritz—the highest readings in England were 80° at Cambridge, 78° in London and at the North Foreland. On Friday 95° was reached in Berlin and 92° at Belfort, while 76° in London and at the North Foreland and 75° at Cambridge were the highest British readings. Very severe thunderstorms passed over England during this period, and local heavy falls of rain and hail occurred. On Saturday there was an extraordinary downpour of rain in Dublin—1·902 inches falling in six hours between 9 15 a.m. and 3 15 p.m. The mean height of the barometer was 29·731 inches, pressure ranging from 29·902 inches, at 9 a.m. of Sunday (wind, S.E.) to 29·474 inches at 9 p.m. of Saturday (wind, variable). The corrected mean temperature was 57·3°, while the mean dry bulb reading at 9 a.m. and 9 p.m. was 56·8°. The thermometers in the screen fell to 46·0° on

Sunday and rose to 69·5° on Wednesday. The wind was first southerly, then light easterly. The rainfall was 2·378 inches, on six days, 2·056 inches being registered on Saturday. No such daily measurement has been recorded in Dublin since October 27, 1880, when 2·736 inches of rain fell. The present is only the third occasion within the past twenty-seven years on which the rainfall exceeded 2 inches within 24 hours in Dublin.

The last three days of the month were changeable, with fresh or strong southerly to south-westerly winds, cloudy skies, and passing showers at times.

The rainfall in Dublin during the five months ending May 31st has amounted to 10·099 inches on 80 days compared with only 5·995 inches on 63 days during the same period in 1891, 11·483 inches on 76 days in 1890, 10·476 inches on 91 days in 1889, 9·068 inches on 69 days in 1888, 6·489 inches on 62 days in 1887, and a 25 years' average of 10·496 inches on 81·6 days.

At Knockdolian, Greystones, Co. Wicklow, the rainfall in May, 1892, was 4·695 inches, distributed over 17 days. Of this quantity 1·180 inches fell on the 12th, ·460 inch on the 24th, and 1·560 inches on the 28th. The total fall since January 1st, 1892, equals 9·548 inches on 67 days.

PERISCOPE.

EHRLICH'S TEST OF URINE IN TYPHOID FEVER.

Dr. Arthur R. Edwards, after making 600 analyses of urine, and applying Ehrlich's test, comes to the following conclusions (*Medical News of Philadelphia*, 12th March, 1892):—"1. The reaction is independent of any single disease or any group of diseases. 2. It is frequently found in urine containing albumen, peptone, biliary substances, sugar, aromatics, and possibly leucomaïnes or ptomaïnes. 3. We have failed to obtain more constant results with the absolute alcohol than without its use. 4. Ehrlich's test is not always present in typhoid, even at the acme of the disease; it was absent in 1½ per cent. of our cases. The reaction, therefore, is at best only a presumptive, and not a positive, evidence of typhoid. Its value is on a par with that of gurgling and tenderness in the right inguinal region and inferior to the temperature, roseolæ, and splenic tumour. 5. Together with more reliable signs and symptoms, as temperature, enlarged spleen, &c., it may contribute to a diagnosis of typhoid, and conversely, when absent, in 98½ cases out of 100, the disease is other than typhoid. 6. It is found in many other diseases, some of which, in certain clinical features, may simulate typhoid—*e.g.*, septicæmia, uræmia, tuberculosis in its varied aspects, intestinal, peritoneal, miliary, &c., as well as enteritis, malaria, and pneumonia. In differential diagnosis, therefore, when other distinctive symptoms are lacking, the sulphanilic acid test is untrustworthy. It fails when most keenly wanted, and may be absent in otherwise typical typhoid fever. 7. If much reliance is placed in the test, a typhoid relapse may be confounded with complications. We have observed, as complications and early sequelæ yielding the reaction, acute nephritis, lobar pneumonia, pulmonary tuberculosis, pleurisy, &c., and would have been at a loss as to the cause if confidence had been reposed in the test. 8. Inasmuch as it occurs typically in many diseases in which the causes and elaborated products differ, and since the various compounds with which the diazobenzene-sulphonic acid unites are as yet unknown, the reaction cannot commend itself to the scientific chemist, however it may be regarded clinically."

TUBERCULIN IN THE DIAGNOSIS OF TUBERCULOSIS IN CATTLE.

Leonard Pearson, B.S., V.M.D., of the Veterinary Department, University of Pennsylvania, records (*Medical News of Philadelphia*, 9th April, 1892) some cases in which he injected tuberculin into cows in order to test whether they suffered from tuberculosis. He writes:—"So far as my experience goes, tuberculin seems to be a safe agent for the diagnosis of tuberculosis in cattle."

PERCENTAGE OF DEATHS IN CHLOROFORM ADMINISTRATION.

Dr. B. W. Richardson (*Asclepiad*, 33) analyses the mortality from chloroform, and concludes that the deaths may be as one in 3,500 inhalations, but that probably one death in 2,000 to 2,500 administrations is nearer the truth, yet even at the lowest rate we employ no other narcotic that approaches chloroform for danger.

THE INFLUENCE OF HEREDITY.

Dr. Woods Hutchinson, writing on the influence of heredity (*Medical News*, Philadelphia, Feb. 13th, 1892), ends thus:—"To sum up roughly, we find a tainted pedigree—

Among	57,000	cases of insanity,	in 10·1 per cent.
„	30,000	„ carcinoma,	„ 10·5 „
„	22,000	„ tuberculosis,	„ 37·8 „

These estimates are, of course, made on far too narrow a basis to be regarded as in any way conclusive, and their reliability for positive purposes is open to serious question in many particulars, but I think they at least justify us in demanding, in answer to the charge that heredity is, in any sense, a prominent or active factor in the production of disease, the Scotch verdict of 'Not proven.' On the other hand, all the remedial power of Nature, individual and racial, all the vigour that defies attack, all the priceless immunity from disease, all the exquisite harmony with environment that surrounds us on every hand, are the direct results and illustrations of the law of heredity. Its beneficent effects are innumerable and unquestionable; its injurious effects few and doubtful."

UNIQUE CASE OF INTUSSUSCEPTION.

Dr. Morris B. Miller reports (*Medical News*, Philadelphia, December 12th, 1891) a unique case of intussusception. The whole of the invaginated portion of the bowel (the pieces measuring in the aggregate fifty-four inches) was discharged a week before death, which did not occur for over a month after the involution took place.

THE HARVARD MEDICAL SCHOOL ASSOCIATION.

This Association has issued an interesting and valuable list of its members, which it will be glad to send to graduates of the Medical Department of Harvard University, in whatever part of the world they may be. The Association was formed about one year ago, and *all* graduates of the School are eligible to membership. The object is to unite all alumni and to advance the interests of the School and of medicine. The entrance fee and the annual assessment are merely nominal.

MEDICO-CHIRURGICAL SOCIETY, GLASGOW.

At the Annual General Meeting of the Society the following gentlemen were elected office-bearers for Session 1892–93:—President: Dr. Joseph Coats. Section of Medicine—Vice-President: Dr. Middleton; Councillors: Dr. Alex. Miller and Dr. Auld; Secretary: Dr. C. O. Hawthorne. Section of Surgery—Vice-President: Dr. W. J. Fleming; Councillors: Dr. Macartney and Dr. Dalziel; Secretary: Dr. John Barlow. Section of Pathology—Vice-President: Dr. J. L. Steven; Councillors: Dr. Charles Workman and Dr. John Brown; Secretary: Dr. R. M. Buchanan. Section of Obstetrics—Vice-President: Dr. Samuel Sloan; Councillors: Dr. M. Cameron and Dr. Lapraik; Secretary: Dr. Lawrence Oliphant. Treasurer: Mr. Henry E. Clark. General Secretary: Dr. Walker Downie.

POPULAR PRESCRIPTIONS.

The *Medical Record* assures us that a well-known Philadelphia pharmacist has recently received the following written orders for medicine:—A dose of castor-oil for a child aged fifteen. Be sure and send enough to work her good. One dozen two-ounce quinine pills; one bottle honeatta water; a boo gee; one box of Brandteth's pills, sugar quoted. Please send enough appecac to throw up a four months old baby; two five-grain blue mask pills; ten cents worth partisapated chalk.

In Memoriam.

WILLIAM COLLES, M.D. UNIV. DUBL., F.R.C.S.I.;

Surgeon-in-Ordinary to Her Majesty the Queen in Ireland;
Consulting Surgeon to Steevens' Hospital,
And to the Rotunda Lying-in Hospital, Dublin.

NOTWITHSTANDING that WILLIAM COLLES had long passed life's mile-stone of four-score years, the tidings of his sudden death on Saturday, June 18, 1892, came to his many friends as a painful surprise. Only a few days before his death, his well-known figure had been seen at the University Club and in the streets of the city. The very end was startling in its suddenness. He had expressed himself as feeling so much better that he was sure his physician would at his expected visit allow him to sit up—a deep sigh or gasp, and in a very few moments all was over!

So died one of the ablest, as he was one of the most modest and retiring, of our Irish surgeons—the worthy inheritor of his father's name—with "honour, love, obedience, troops of friends."

WILLIAM COLLES was born on July 2, 1809, at No. 13 St. Stephen's Green, Dublin. His father was the celebrated surgeon, Abraham Colles, whose description of the fracture of the lower end of the radius has given to this injury the name of "Colles's fracture." His mother was Sophia, daughter of the Reverend Jonathan Cope, Rector of Ahascragh, Co. Galway. Educated at an Irish school, young COLLES was apprenticed to his father on April 11, 1826, and entered upon his professional studies in the School of Surgery of the Royal College of Surgeons in Ireland and at Steevens' Hospital. About the same time he entered Trinity College, Dublin, where he graduated in Arts in the year 1831. On the 9th of July in the same year he obtained the Letters Testimonial of the Royal College of Surgeons, of which he was elected a Member on May 1, 1837. After obtaining his surgical qualification, COLLES spent some time in the hospitals of Vienna, Berlin, and Göttingen. In 1834 he was elected House Surgeon to Steevens' Hospital, a post which he held for the usual term of seven years, when he became Visiting Surgeon to the Hospital—

an appointment which he filled for well-nigh half a century. So long as the Medical School attached to the Hospital was in existence he was one of the lecturers on surgery in it.

In 1841 COLLES graduated in medicine in the University of Dublin, but it was not until 1865 that he proceeded to the higher degree of Doctor of Medicine. In 1844 he became a Fellow of the Royal College of Surgeons in Ireland.

Although modest and retiring in disposition to a fault, COLLES did not long remain without tokens of public and professional esteem. In connection with the Royal College of Surgeons in Ireland he held for many years the honorary offices of Librarian and Secretary. In 1863-64 he was President of his College. He was elected Consulting Surgeon to the Rotunda Lying-in Hospital, and to Sir Patrick Dun's Hospital. But still higher honours fell to his lot, unasked for and unsought. On the death of Mr. Robert Adams, in 1875, he became Regius Professor of Surgery in the University of Dublin, while the Queen marked her appreciation of his professional standing and sterling qualities as a Surgeon by appointing him one of her Surgeons-in-Ordinary in Ireland.

MR. COLLES married, in 1850, Pamella Hatchell, daughter of Mr. Cadwallader Waddy, of the County Wexford, which county at one time that gentleman represented in Parliament. Three children of this marriage survive—Mr. Abraham Colles, who inherits his grandfather's name and practises at the Irish bar; and two married daughters. To his family, it has been well said, WILLIAM COLLES has left "the priceless heritage of an honoured name."

The subject of this memoir was a man of few words, but he contributed to medical literature many papers of sterling merit. The following is a full list of his contributions to the pages of this Journal between the years 1845 and 1888:—

1. "On the Treatment of a Peculiar Form of Disease of the Prostate Gland." First Series. Vol. XXVII. 1845.
2. "Observations upon Urinary Fistula." Second Series. Vol. IV. 1847. Page 57.
3. "Cases of Injurious Effects following the Use of Rye as Food." Vol. IV. 1847. Page 243.
4. "Observations on Nasal Polypi." Vol. VI. 1848. Page 373.

5. "An Improved Method of Operating for Congenital Phimosis." Vol. VII. 1849. Page 250.

6. "On a Peculiar Form of Gonorrhœa." Vol. X. 1850. Page 102.

7. "Case of Femoral Aneurism Cured by Pressure." Vol. XI. 1851. Page 497.

8. "On Traumatic Spasms." Vol. XIII. 1852. Page 33.

9. "Selections from the unpublished Manuscripts of the late Abraham Colles." Vol. XV. 1853. Page 280. Vol. XVI. 1853. Pages 55 and 290. Vol. XVII. 1854. Page 82. Vol. XVIII. 1854. Page 28. Vol. XX. 1855. Page 335. Vol. XXII. 1856. Page 27. Vol. XXIII. 1857. Page 374.

10. "Report of Two Cases in which Ligature was applied to the Posterior Auris Artery." Vol. XIX. 1855. Page 73.

11. "Account of a Case in which Death was occasioned by a Fish-bone penetrating the Aorta through the Œsophagus. Vol. XIX. 1855. Page 325.

12. "On Aneurismal Sacs." Vol. XXI. 1856. Page 53.

13. "Case of Reducible Inguinal Hernia—Radical Cure performed according to Wood's Method." Vol. XXXIII. 1862. Page 243.

14. "Cases of Injuries of the Larger Joints, with Remarks." Vol. XLI. 1866. Page 47.

15. "Case of Trephining the Mastoid Process." Vol. L. 1870. Page 32.

16. "Dr. Sayres' Splint applied to Fractured Neck of Femur." Vol. LIII. 1872. Page 187.

17. "The Treatment of Hæmorrhoids by the Injection of the Tincture of Perchloride of Iron." Vol. LVII. 1874. Page 505.

18. "Case of Necrosis of Femur, with Remarks." Vol. LXIV. 1877. Page 201.

19. "On Aneurismal Sacs." Vol. LXIV. 1877. Page 281.

20. "Necrosis without Suppuration." Vol. LXVI. 1878. Page 453.

21. "The Diagnosis of Cancer of the Testis." Vol. LXXXVI. 1888. Page 1.

22. "The Influence of Position on Fractures of the Lower Extremities." Vol. LXXXVI. 1888. Page 192.

THE DUBLIN JOURNAL
OF
MEDICAL SCIENCE.

CONTENTS.

THIRD SERIES, No. CCXLVIII.—AUGUST 1, 1892.

PART I.—ORIGINAL COMMUNICATIONS.

PAGE

ART. V.—Pelvic Hæmatocele. By THOMAS MORE MADDEN, M.D., F.R.C.S. Ed.; Obstetric Physician and Gynæcologist, Mater Misericordiæ Hospital, Dublin; Examiner, Conjoint Board, Royal College of Surgeons and Apothecaries' Hall of Ireland; Consulting Physician, Hospital for Children, &c., - - - - - 97

ART. VI.—Diarrhœa in Infancy and Childhood: its Causes, Symptoms, and Treatment. By JOHN M'CAW, M.D., R.U.I., L.R.C.P. Edin.; Physician to the Belfast Hospital for Sick Children, Queen's-street; Hon. Secretary, Ulster Medical Society, - - - - 105

PART II.—REVIEWS AND BIBLIOGRAPHICAL NOTICES.

1. A History of Medical Education from the most Remote to the most Recent Times. By DR. THEODORE PUSCHMANN, Public Professor in Ordinary at the University of Vienna. Translated and Edited by EVAN H. HARE, M.A. (Oxford), F.R.C.S. (England), L.S.A. (London), - - - - - - - - - 117

2. The Anatomical and Histological Dissection of the Human Ear, in the Normal and Diseased Condition. By DR. ADAM POLITZER, Professor of Otology in the Imperial Royal University of Vienna, &c. Translated from the German by GEORGE STONE, - - 126

3. Lectures on Pathology. Delivered at the London Hospital. By the late HENRY GAWEN SUTTON, M.B., F.R.C.P., Physician and Lecturer on Pathology at the London Hospital, &c. Edited by MAURICE E. PAUL, M.D.; and Revised by SAMUEL WILKS, M.D., F.R.S., - - - - - - - - - 130

4. The Nursing Directory for 1892, - - - - - 132

PAGE

5. Traitement des Maladies de la Peau; avec un Abrégé de la Symptomatologie, du Diagnostic et de l'Étiologie des Dermatoses. Par le Dr. L. Brocq, Médicin des hôpitaux de Paris. Deuxième Édition, corrigée et augmentée, - - - - - - 133
6. The Leeward Islands Medical Journal, being the Proceedings of the Leeward Islands Branch of the British Medical Association, 1891. Edited by H. A. Alford Nicholls, M.D., F.L.S.; Ch.M. Aberdeen; M.R.C.S.E.; Corresponding Member of the New York Academy of Sciences, - - - - - - 135
7. Syphilis in Ancient and Pre-historic Times. By Dr. F. Buret, Paris, France. Translated from the French, with Notes, by A. H. Ohmann-Dumesnil, M.D.; Professor of Dermatology and Syphilology in the St. Louis College of Physicians and Surgeons; Consulting Dermatologist to the St. Louis City Hospital; Physician for Cutaneous Diseases to the Alexian Brothers' Hospital, &c. - 136
8. Burdett's Hospital Annual aud Year-Book of Philanthropy, 1891–1892: containing a Review of the Position and Requirements of the Voluntary Charities, and an exhaustive Record of Hospital Work for the Year. It will also be found to be the most useful and reliable Guide to British and Colonial Hospitals, Dispensaries, Nursing, and Convalescent Institutions, and Asylums. Edited by Henry C. Burdett, Author of "Hospitals and Asylums of the World," &c., - - - - - - - - 140
9. Diseases of the Eye. A Hand-book of Ophthalmic Practice. By G. E. de Schweinitz, M.D.; Professor of Diseases of the Eye, Philadelphia Polyclinic; Ophthalmic Surgeon to Children's Hospital and to the Philadelphia Hospital; Ophthalmologist to the Orthopædic Hospital and Infirmary for Nervous Diseases; Lecturer on Medical Ophthalmoscopy, University of Pennsylvania, &c., - 141
10. Fourteenth Annual Report of the Presbyterian Eye, Ear, and Throat Charity Hospital, Baltimore, - - - - 142
11. Aids to Practical Hygiene. By J. Carter Battersby, - - 142

Part III.—SPECIAL REPORTS.

Report on Public Health. By Sir Charles A. Cameron, M.D.; ex-President, Diplomate (*Honoris Causâ*) in Public Health, and Professor of Chemistry and Hygiene, R.C.S.I.; President of the British Institute of Public Health; Examiner in Sanitary Science, Royal University of Ireland; D.P.H. (Camb.); Medical Officer of Health for Dublin, &c.:—

On some Points in the Ætiology of Typhoid Fever—(*continued*), - 143
Some Peculiar Specimens of Water, - - - - - 146
Diphtheria in Belgium, - - - - - - - 154
Boric Acid in Food, - - - - - - - 159
The Microbe of Influenza, - - - - - - 160
Epidemic Pneumonia, - - - - - - - 161

Part IV.—MEDICAL MISCELLANY.

PAGE

Royal Academy of Medicine in Ireland:—

SECTION OF PATHOLOGY.

Adenoma of the Breast in Childhood. By Mr. R. Glasgow Patteson, - - - - - - - - 166
Alveolar Sarcoma. By Mr. Conolly Norman, - - - 167
Syphilitic Gummata of Liver and Spleen. By Dr. Walter Smith, 167
Fracture of the Lower End of the Radius. By Professor E. H. Bennett, - - - - - - - - 168

SECTION OF SURGERY.

Specimens Exhibited, - - - - - - - 169
Aneurysm or Abscess. By Mr. Barton, - - - 169
Trephining for the Evacuation of a Cerebral Cyst and Word-Blindness. By Mr. Wheeler, - - - - 170

SECTION OF MEDICINE.

Specimen by Card. By Dr. J. O'Carroll, - - - 172
The Limits of Medicine and Surgery in Disease of the Vermiform Appendix. By Dr. C. B. Ball, - - - - 172
A Case of Intra-Laryngeal Growth. By Dr. R. H. Woods, - 175

Clinical Records:—

Extraction of a Tooth followed by Cellulitis, Œdema Glottidis, and Laryngo-Tracheotomy. By W. Langford Symes, Kiltegan, - 177

Sanitary and Meteorological Notes. Compiled by J. W. Moore, B.A., M.D., Univ. Dubl.; F.R.C.P.I.; F.R. Met. Soc.; Diplomate in State Medicine and ex-Sch. of Trin. Coll. Dubl.:—

Vital Statistics for Four Weeks ending Saturday, June 18, 1892, 180
Meteorology—Abstract of Observations made at Dublin for Month of June, 1892, - - - - - - - - 185

Periscope:—

Influenza and Birth-rate, - - - - - - 116
Nephrotomy after Nephrectomy, - - - - - - 165
Poisoning by Potassium Chlorate, - - - - - 165
Recurrence of Mammary Carcinoma, - - - - - 176
Ancient Vaccination in India, - - - - - - 179
Gold Cure for Drunkenness, - - - - - - 190
Malignant Noma, - - - - - - - 190
Annales de la Policlinique de Lille, - - - - - 190
Oleomargarine, - - - - - - - - 191
On the Treatment of Alopecia Areata, - - - - - 191
Barcelona, - - - - - - - - 192
The Post Graduate, - - - - - - - 192

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ORIGINAL COMMUNICATIONS.

ART. V.—*Pelvic Hæmatocele.* By THOMAS MORE MADDEN, M.D., F.R.C.S. Ed.; Obstetric Physician and Gynæcologist, Mater Misericordiæ Hospital, Dublin; Examiner, Conjoint Board Royal College of Surgeons and Apothecaries' Hall of Ireland; Consulting Physician, Hospital for Children, &c.

AMONGST the obscure forms of disease that have come under observation in the gynæcological wards of the Mater Misericordiæ Hospital during the last seventeen years, none have probably given rise to greater trouble in diagnosis or treatment than pelvic hæmatocele. In the larger number of such instances the patient, when sent into hospital, was supposed to be suffering from a peri-uterine phlegmon, or from some tubal or other disorder. Moreover, as an examiner, I have noticed, even amongst otherwise well-informed students, the prevalence of very erroneous views with regard to the pathology, symptoms, and method of dealing with this condition. Hence a brief recapitulation of the most important points connected with the subject, as established by Mr. Tait and others, whose views are borne out by my own experience, may be not altogether useless in obviating a repetition of errors, into which I have myself fallen in former days, and from which, as I have had sufficient proof, some other practitioners are not yet altogether exempt.

In discussing questions of this kind it is, I think, always well in the first place to define the condition which we are about to consider; and probably no better definition of the term pelvic hæmatocele can be given than "a circumscribed collection of blood effusion wholly or partially situated within the pelvic cavity, either in its peritoneal or in its cellular structures." In the first, or intra-peritoneal, form of hæmatocele, the effusion, as a rule, results from rupture of an ectopic gestation; whilst in the second, or extra-peritoneal, class of cases, although it may also be due to a similar cause the source of the hæmatoma is most frequently traceable to menstrual abnormalities.

Of these two distinct classes of pelvic hæmatocele the intra-peritoneal form is obviously, from its anatomical situation, as well as from its general cause, by far the more serious in its consequences, and must, therefore, in the first instance be here noticed.

Intra-peritoneal Hæmatocele.—For our present knowledge of the pathology and treatment of this condition we are chiefly indebted to Mr. Lawson Tait, by whom it has been clearly established that such cases, as a rule, are dependent on the rupture of tubal gestations, and may then be successfully treated by timely resort to intra-peritoneal surgery. On the former point, as the result of his exceptionally large experience, Mr. Tait states that he has "never seen an intra-peritoneal hæmatocele that was not due to a ruptured tubal pregnancy; and very many cases of extra-peritoneal hæmatocele (effusions of blood into the broad ligaments) have undoubtedly been tubal pregnancies which have ruptured between the peritoneal folds of that important structure."[a] The same view has been corroborated, amongst other recent writers, by Dr. Auvard of Paris,[b] who says that nineteen out of twenty of these cases are consequent on ectopic gestation. As, however, the consideration of extra-uterine pregnancy does not come within the limits of a non-obstetric topic, it will be here referred to only in so far as it bears directly on the subject of intra-peritoneal hæmatocele.

Of the several forms of ectopic gestation—namely, ovarian, abdominal, interstitial, and tubal—enumerated by some authorities as possible causes of hæmatocele, the last mentioned alone calls for serious consideration in this connection, inasmuch as the facts recorded by Tait leave no room for doubt that the seat of the ectopic gestation is almost invariably tubal in such cases:—"I have," he says, "now been concerned directly or indirectly in the

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[a] Lawson Tait. Lectures on Ectopic Gestation and Pelvic Hæmatocele. P. 25.

[b] Auvard. Traité Pratique de Gynécologie. Paris. 1892.

post-mortem examinations of 26 women who have died from hæmorrhage into the peritoneum (intra-peritoneal hæmatocele) from ruptured ectopic gestation. I have had to operate 40 times for the same cause, and I have witnessed about 10 similar operations by other surgeons, making in all the unique experience of 76 cases. In every one of these the seat of pregnancy was ascertained to be without doubt the Fallopian tube, and in only one was the seat of pregancy in that part of the tube embraced by the uterine tissue."

In all cases of intra-peritoneal hæmatocele resulting from extra-uterine pregnancy the rupture of the gestation cyst occurs during the early development of the misplaced embryo, most generally during the first and second months, and hence, as a rule, before the existence of pregnancy, or still less its abnormal situation, has been recognised. At a later period both become evident, and the rupture then of the ectopic gestation cyst leads, not to hæmatocele, but to immediate death from shock and hæmorrhage, unless that event be averted by timely and successful surgical interposition. The circumstances calling for this, and the method by which it may be accomplished, do not, however, come within the scope of the present paper, in which we have only to deal with those less immediately serious hæmorrhagic effusions consequent on rupture of such gestation cysts in their earlier stages and resulting in hæmatocele.

By various writers, besides ectopic gestation, many other sources of intra-peritoneal hæmatoma have been described, including, *inter alia*, direct hæmorrhagic exudations from the peritoneum, or from the ovaries and Fallopian tubes, whether consequent on the bleeder-diathesis, or on local hyperæmia, or congestive diseases of these structures. Traumatic cases of this kind following intra-peritoneal operations or injuries may also be met with, as well as others ascribable to a varicose condition of the utero-ovarian veins or else to cystic or malignant disease and other structural lesions in the ovary, such as active congestion or apoplexy therein, leading to extravasations of blood from the engorged vessels. Most of these conditions, however, may be included in the long list of circumstances that were formerly, but are now no longer generally, regarded as frequent causes of the disease under consideration.

The same observation may be applied to the alleged influence which has been ascribed to rupture of a Graafian vesicle elsewhere than into the Fallopian tube, in reference to which Dr. Graily-Hewitt says:—"If a Graafian follicle does not rupture, as it should, into the Fallopian tube, hæmorrhage takes place within it; it enlarges from continuous bleeding and ruptures. Should the bleeding be profuse an intra-peritoneal hæmatocele would be produced." The possibility of that result is unquestionable, but its probability is quite another matter, and is opposed to the teachings of recent authorities, by whom it has been shown that ovulation and menstruation are not always and necessarily coincident—the former taking place intra-menstrually as well as at the catamenial periods, at which alone the fimbriated extremities of the tube being applied to the ovary the matured ovisac ruptures into and is transmitted through that duct, whilst at other times when the ovisac ruptures the ovum escapes into and perishes within the peritoneal cavity. If, therefore, the latter event is to be regarded as a physiological occurrence it can hardly at the same time be considered likely, as was supposed by Schroeder and Graily-Hewitt, to lead to the grave pathological condition we are now discussing.

Symptoms.—In these instances it commonly happens that the first symptoms calling attention to an ectopic gestation are those indicating rupture of the tube, whence intra-peritoneal hæmatocele originates as a rule. This occurrence is denoted by an acute attack of cramp-like spasms in the lower abdomen, accompanied by rigors and fixed localised pain in the situation of the ruptured gestation cyst, and immediately followed by faintness, rapid, thready pulse, pallor of surface, coldness of extremities, jactitation, and other evidences of collapse from loss of blood. After a while, if the immediate hæmorrhage be not such as will prove speedily fatal, the effusion is temporarily checked by clotting, and shrinkage of the ruptured vessels, and reaction is gradually established, and may be maintained for some hours or days. This respite is, however, generally a very brief one in these cases, as eventually, and probably consequently, on the first attempt at active motion, the hæmorrhage and other symptoms return in an aggravated degree. The abdomen is now found tender on touch, as well as distended by a fluctuating tumefaction, the extent and character of which is dependent on the amount and situation of the sanguineous effusion in each case. Generally speaking, however, the tumour thus occasioned is not only in the lower portion of the abdominal cavity—*i.e.*, in the iliac and hypogastric regions—but also presses down into the retro-uterine *cul-de-sac* of the vaginal vault, the convexity of which is thus bulged in, and through which on local examination the soft, fluctuating and somewhat ill-defined outline of the hæmatocele may be recognised.

Treatment of Intra-peritoneal Hæmatocele.—It is needless to occupy time by reference to those wholly ineffectual measures—such as styptics, ergot, opium, iced-water injections, &c.—with which, until within the past few years, practitioners were perforce content to rely during the interval between the intra-peritoneal rupture of an ectopic gestation and the then generally inevitable death of the patient in these cases. That period of surgical darkness has now passed away, and by the light of modern teaching we have at last come to recognise the simple fact that the successful treatment of an intra-peritoneal hæmatocele can be realised only by the timely removal of its cause. The means by which that object is accomplishable may be summed up in very few words—viz., immediate recourse to abdominal section for the purpose of ligation of the source of hæmorrhage, and removal of the tubal gestation cyst, followed by thorough cleansing away of all foci of sepsis in the peritoneal cavity. Briefly as this only rational method of dealing with such cases may be thus recapitulated, that idea was only accomplished after many years from the time of its suggestion by Burns, of Glasgow, in 1814, and again by Blundel, in 1830, down to its successful realisation by Tait in 1883. It would, however, be needless here to refer further to the operative treatment of ectopic gestation, the details of which may be found either in Tait's writings or in any reliable recent text-book of obstetric surgery.

Extra-peritoneal Hæmatocele.—We have next to consider briefly that less serious, but more frequent, class of pelvic hæmatocele in which the effusion is situated in the broad ligament or connective structure adjoining the uterus, into which an early tubal gestation may rupture, as well as into the peritoneum. The symptoms of the tubal accident will be of a similar character in both instances, although less acute in the sub-peritoneal or broad-ligament variety, the effusion from which is comparatively limited and most likely to result in the ordinary chronic form of pelvic hæmatocele, the treatment of which, as a rule, may be better trusted to nature than art. In the larger number of cases, however, extra-peritoneal hæmatocele results from some menstrual derangement, such, for instance, as the sudden suppression of normal menstruation or of menorrhagia by cold or other causes, or else from obstructive amenorrhœa and dysmenorrhœa due to cervical stenosis, by one or other of which the free discharge of the catamenial fluid, *per vias naturales*, may be arrested, impeded, or rendered difficult. Still more likely is the occurrence of intra-pelvic sanguineous effusion from structural abnormalities—viz., deficiency or occlusion, congenital or acquired, of any portion of the utero-vulval passage, leading, primarily, to hæmatometra, or accumulation of pent-up menstrual fluid in the uterine cavity, and, secondly, to its escape thence through the Fallopian tubes into the pelvic connective tissue. In other instances the starting-point of such pelvic hæmatoceles is distinctly tubal, the effusion being directly poured out from the vessels in the oviduct and so finding its way through the abnormally distended fimbriated extremities.

The immediate exciting causes and consequent symptoms of extra-peritoneal pelvic blood tumours must next be alluded to, and in so doing we may avail ourselves of M'Clintock's clinical observations on this subject, to the accuracy of which, when his pupil, I was myself an eye-witness, and which have been again and again reiterated without acknowledgment by some subsequent writers. Of the exciting causes thus referred to, the most important are—sudden suppression of the catamenial discharge; violent bodily efforts, or intense mental emotion; over-fatigue; excessive or rude coition, or sexual congress at the menstrual period; external injuries to the abdomen; premature exertion after miscarriage; violent straining—all of which appear to have acted as exciting causes of the hæmatocele in some instances. Physiology teaches us, and experience abundantly confirms it, that the menstrual epoch is the time at which the extravasation is most easily produced; and that an exciting cause, which would at any other time prove harmless, may now provoke it.

The leading *symptoms* which present themselves after the occurrence of this accident are—hypogastric pain and tenderness with febrile action, succeeding to menstrual derangement, sometimes amenorrhœa, but more frequently menorrhagia preceded, perhaps, by a temporary suppression of the menstrual discharge. A tumour suddenly develops itself in the hypogastric or iliac region, or behind and partly below the neck of the uterus. At first this tumour is soft and fluctuating, but at a later period has more firmness. Tenesmus and irritability of the bladder are frequently present also. The character and intensity of the symptoms will mainly depend upon the mode of inception of the disease; and in the extra-peritoneal form of pelvic hæmatocele due to menstrual causes, now under consideration, these symptoms, as a rule, develop very gradually, and are often so obscure in their inception and subsequent course as to give rise to much practical difficulty in their differentiation from other pathological conditions in the same situation, and, above all, in their diagnosis from peri-uterine phlegmon or pelvic abscess.

The size and position of the blood-tumour in cases of extra-peritoneal hæmatocele must, as has been observed with reference to the intra-peritoneal form of effusion, depend mainly on the quantity of blood extravasated. Superiorly a large hæmatocele may be recognisable in either the iliac region or above the pubes. Inferiorly the tumour presses on the vagina and rectum. As the result of pressure on the vagina, this canal is encroached upon, and a prominence is formed on its upper and posterior part, offering some hindrance to our reaching the os uteri with the finger. The cervix is displaced forwards and against the symphysis pubis or to either side.

The existence of this tumour, as well as its size and situation, can be readily determined on a properly conducted conjoint or bi-manual examination by the rectum and vagina and above the pubes, though whether its contents be sanguineous, serous, or purulent, cannot definitely be thus settled, and on this point, to a large extent, our conclusions must rest on the history and general symptoms of the case. The rapidity of its occurrence will constitute a strong ground for supposing the tumour to be a hæmatocele. Another important character belonging to the hæmatomic tumour is that, as pointed out by M'Clintock, "it presents a succession of changes in its density, and, consequently, in the sensation which it communicates to the touch. Soon after the effusion has taken place, there is a more distinct sense of fluctuation in it that at any subsequent period. Some days later this is replaced by a doughy feel, and still later the tumour has an increased density, becomes hard in some particular spots, and fluid in the parts adjoining, owing to the separation of the coagulum into solid and serous portions."[a]

Treatment.—In no respect is the contrast between intra- and extra-peritoneal blood effusions, or pelvic hæmatoceles, more striking than in the very different methods of treatment required by the two classes of cases. In the former prompt, bold, and skilful operative interference by abdominal section is imperative. In the latter, as a general rule, and under ordinary circumstances, such measures are wholly uncalled-for. In considering the treatment of this condition its two chief probable causes must be borne in view—namely, first, ectopic gestation rupturing into the broad ligament; and secondly, obstructed menstruation. Even in the former class of cases, however, the necessity for active surgical interference comparatively seldom arises. "In such instances," as Tait says, "in the act of rupture the ovum is usually destroyed. The case then resolves itself into one of simple broad-ligament hæmatocele, which is to be left severely alone; it will be absorbed, but the convalescence will be long. These cases should not be molested. Many a man has bitterly regretted having tapped them, because by lessening the pressure the hæmostatic effect of the pressure is lessened and the cyst will refill, and the woman will die as surely from loss of blood as if the hæmorrhage had taken place into the peritoneum. The cases that go wrong are those that are injudiciously interfered with. If the blood is absorbed, then there is an end of the matter. Sometimes, however—perhaps 1 in 10 of the cases—the ovum is not killed, the hæmorrhage being smaller; it then goes on developing into a series of conditions. These, however, in the present connection need not be further referred to." In the second class of extra-peritoneal hæmatocele—viz., that in which the origin of the effusion is menstrual—its early symptoms are, as a rule, so ill defined and obscure that the case has generally passed into the chronic stage before its nature is recognised. Hence the directions laid down in various text-books for arresting the hæmorrhagic effusion—such as bladders of ice over the pubes and abdomen, iced-water injections into the vagina and rectum, absolute rest, gallic acid, ergot, opium, &c.—being seldom available, and probably utterly useless, need not be here further alluded to. When the disease actually comes under observation—viz., when active effusion has ceased and the resulting blood-tumour alone remains to be dealt with—the obvious indications are, first, to promote its absorption, and at the same time to maintain and improve the constitutional condition of the patient, and thus, as far as possible, diminish the probability of any pyogenic changes in the blood collection; and secondly, to obviate the local complications or pressure-troubles likely to be occasioned by its presence.

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[a] M'Clintock. Clinical Memoirs on Diseases Peculiar to Women. P. 254.

For the first purpose we must trust mainly to the *vis medicatrix naturæ* and to time, as I know of no remedy by which this object can be secured. At the same time, I may observe that I think I have not unfrequently found the absorption of a hæmatocele apparently accelerated by the combination of a grain of bichloride of mercury with forty grains of iodide of potassium in three or four ounces of tincture of bark, of which mixture teaspoonful doses in water are generally prescribed to be taken two or three times a day in the cases of this kind treated in my wards. If the tumour be not absorbed, however, within a short time it almost invariably creates irritation or inflammatory action in the adjacent organs, and sooner or later becomes itself the seat of suppurative changes (giving rise to constitutional disturbance or possibly to septicæmia), being then converted into a sanguino-purulent collection, which, following the course of a pelvic abscess resulting from peri-uterine phlegmon, may ultimately discharge itself either into the vagina or into the rectum or bladder.

In those instances of sub-peritoneal hæmatocele in which operative treatment is necessitated by exceptional urgency of symptoms, that treatment may be more effectively, and probably more safely, carried out by abdominal section than by the older method of vaginal incision or puncture with the aspirator, over which properly-conducted and aseptic laparotomy operations afford greater facility in dealing with the tubal or other cause of the hæmatomic effusion, as well as in effecting the complete evacuation of the hæmatocele with less liability to subsequent sepsis.

ART. VI.—*Diarrhœa in Infancy and Childhood: Its Causes, Symptoms, and Treatment.*[a] By JOHN M'CAW, M.D. R.U.I., L.R.C.P. Edin.; Physician to the Belfast Hospital for Sick Children, Queen's-street; Hon. Secretary, Ulster Medical Society.

MR. PRESIDENT AND GENTLEMEN,—Those of us here to-day who had the pleasure and advantage of listening to the very exhaustive paper of my friend and colleague, Dr. Byers, on infant feeding, at the spring meeting of this branch, will remember with what clearness he pointed out the relationship between the feeding of infants and diarrhœa. In the discussion which followed, Dr. Whitaker, the Medical Superintendent Officer of Health for Belfast, touched upon the high death-rate due to diarrhœa in children, and it occurred to me that this subject might very fittingly form a portion of the work for your summer meeting in the month of July, this being a very suitable time in which to consider it.

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[a] Read before the North of Ireland Branch of the British Medical Association, July 7th, 1892.

Until within recent years diarrhœa in childhood received but scant consideration at the hands of writers on medicine, but of late it has attracted much attention; and that it is the cause, directly or indirectly, of the very high death-rate in young children, especially in hot climates, in large towns, and in the summer months, has been placed beyond reasonable doubt. Many different kinds of the affection have been described, but as it is not my intention to deal to-day with what I may call the specific diarrhœas in children, such as those due to tubercular ulceration, typhoid fever, and the like, I confine my remarks to the following three forms, viz.:—

1. Non-Inflammatory Diarrhœa or Mild Intestinal Catarrh.
2. Acute Inflammatory Diarrhœa, Severe Intestinal Catarrh or Entero-Colitis, and
3. Choleraic Diarrhœa or Infantile Cholera.

First, then, as to Non-Inflammatory or Simple Diarrhœa. Under this head are included those cases of diarrhœa in which there is derangement of function without anatomical changes, without fever, and without involvement of the stomach, or, as Dr. Holt, of New York,[*] puts it, cases which are not dyspeptic.

Causes.—Of the causes of this form in the front rank must be placed "Improper Feeding," and especially improper hand-feeding. When we bear in mind the fact emphasised by Dr. Byers in his paper already referred to, that by far the best feeding for children is the secretion of the mother's breast, it may seem strange for me to say that in my experience this form of diarrhœa is not uncommon in breast-fed babies. The reason of this is, in the majority of cases, the very common practice with mothers of giving the child the breast whenever it cries. This habit is bad in every sense, bad for the child, bad for the mother, and especially bad for the milk. The child's stomach requires some rest, which it cannot get if it is tugging at the breast every five minutes. The mother's breast requires rest, which it is denied for the same reason; and the quality of the milk is greatly deteriorated if the secreting apparatus is constantly kept working at high pressure.

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[*] Cyclopædia of the Diseases of Children. Vol. III., page 106.

Breast-fed children may suffer from this form of diarrhœa, in consequence of the mother's health being at fault; by drugs given to the mother; or by dietetic errors on her part; frequently also by menstruation and pregnancy, or by various influences, such as grief, exhaustion, and the like.

The manner in which hand-feeding is performed has been blamed, and justly so. Hand-fed children are almost always *over-fed.* It is a common practice with the poor for a large bottle—the ordinary half-pint whisky bottle seems to be the favourite—with a long tube, to be filled in the morning and placed beside the child in its crib, thus allowing it to feed or sleep just as it likes, sleeping often for hours with the nipple in its mouth, or, it may be, waking after short snatches of sleep for a pull at the bottle. Need I say that this practice of constant feeding, which means in other words over-feeding, is in itself productive of much mischief. Articles of food unsuited to the child's age are very often given, and the practice of giving infants but a few months old farinaceous articles and "a taste from the table," I know to be a very common one amongst the poor of Belfast. Before many of these poor children have completed their first year, potatoes, tea, coffee, beer, stews, sausage, and many other things equally unsuitable and indigestible, are given as a regular thing.

Another common cause of diarrhœa is the practice of preparing for the child in the morning the whole day's supply of food. This supply rarely remains unchanged for many hours together, and often, after a short time, and particularly in hot weather, is quite unfit for food. In this connection, I would recall to your mind the method demonstrated by Dr. Byers of sterilising in separate bottles your day's supply of food, and using one by removing the cork, as occasion requires. A cause of diarrhœa, which is little less common than those I have mentioned, is chilling of the surface. We must bear in mind that children, and especially infants, are very sensitive to changes of temperature, and part with their body-heat very rapidly and easily. Dr. Eustace Smith[a] has written very strongly on this point, and he says that unfortunately it is just at this susceptible age that the body is habitually less covered than at any other period of life. At all seasons, he says, while indoors, his legs and arms are bare, often his neck and shoulders as well, and not seldom from the waist downwards he is covered by nothing but his short and scanty skirts. In England the derangement is especially prevalent at the end of spring and the beginning of autumn, seasons when the warmth of the day is rapidly succeeded by the cool of the evening. We should therefore bear in mind that a chill, which in the adult would result in a bronchial attack, will in the child cause an attack of diarrhœa.

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[a] On Disease in Children. 2nd Edition, page 625.

It may also be caused by impure cow's milk, due to disease in the cow, to the care and food of the cow, to adulteration or pollution of the milk in the process of delivery, to dirty utensils, pails, pans, or cans in which the milk is kept, or last, but by no means least, to dirty or improper feeding-bottles.

Symptoms.—I need not dwell long on these, as they are familiar to you all.

The attack occurs suddenly, and is preceded for some hours usually by griping pains more or less severe. There is nausea, a furred tongue, restlessness, peevishness, and other signs of discomfort. In a short time a discharge, often profuse, of thin feculent matter takes place from the bowel, generally containing lumps of undigested food; these dejections have often a very offensive smell and are frothy from fermentation. These are succeeded by other dejections, which are smaller and watery or slimy, showing an excess of mucus, and tinged of a green colour.

In these simple cases there is no vomiting, and the temperature is not elevated—these being the two most important symptoms serving to diagnosticate this form from the next variety. The duration of the attack varies from 24 hours to 2 or 3 days, but if neglected it often passes into the next and more serious variety.

Treatment.—To begin with, prevention is better than cure, and undoubtedly the best preventive is the mother's breast. In this connection the following statistics are interesting[a]:—Of 1,000 fatal cases of diarrhœa recorded by Hope, 30 had the breast exclusively; of 602 fatal cases recorded by Meinert, 24; and of 341 fatal cases recorded by Ballard, only 7—making a total of 1,943 fatal cases, of which only 61, or about 3 per cent., had the breast exclusively. These figures speak volumes to show that the manner of feeding is one of the most important factors in the production as well as in the prevention of diarrhœa.

These cases are easily and promptly curable as a rule, if taken in time. If there be abdominal distension and discomfort, and

[a] Cyclopædia of the Diseases of Children. Vol. III, page 64.

especially if the motions contain lumps of undigested curd and starch, nature should be assisted with a full dose of castor oil, or a powder containing—

℞. Hyd. c. cret., gr. 1;
Pulv. rhei, gr. 2;
Sodii bicarb., gr. 4;
Pulv. cinnamomi, gr. 1.—M.

Ft. chart.

Professor Holt, of New York, says that after giving a dose of castor-oil, or one of the above powders, *opium* is the sovereign remedy, and he gives it either in the form of Dover's powder or "paregoric," and for a child a year old he gives a quarter of a grain of the former, or 6 to 10 minims of the latter. An important point in the treatment of these cases is to keep the abdomen warm by means of a flannel binder or pad of cotton wool. The day following this mixture will be of service:—

℞. Spt. ammon. arom., ♏ xx;
Tr. rhei, ♏ xxiv;
„ opii, ♏. iv;
Spt. chloroformi, ♏ xxiv;
Aq., ad ℥i.

Dose: a teaspoonful by measure every sixth hour for a child 6 months old. In cases where the stools are frothy and acid—and I would here advise you to test this point with litmus—oxide of zinc, one grain, or bismuth and chalk, of each four grains, or the old-fashioned chalk and catechu mixture will be of service. If the child is being nursed nothing but the breast at regular intervals is to be allowed; if it is being hand-fed it will be well to sterilise the milk and add to it equal parts of barley-water, at the same time making it alkaline by the addition of 10 drops of the saccharated solution of lime. Some writers recommend that milk should be instantly abandoned, but in this simple variety such an extremity will rarely be called for.

Second, as regards the—

2. Inflammatory diarrhœa, severe intestinal catarrh or entero-colitis. This is a much more severe affection than the preceding one, and it is to this form that a large percentage of the deaths in early life in large cities is due. The purging may be severe from the onset, or it may begin in a mild looseness of the bowels. It has a rapid and marked effect on the strength of the child, and in those of feeble constitution may carry them off with startling suddenness.

The causes of this form may be those already enumerated as giving rise to the mild variety, such as improper feeding and chilling of the surface; but in addition to these, and of more importance in large towns and among the poor, are the drinking of contaminated water and the effluvia from decaying organic matter given out by the putrefying refuse of large cities. An infant of poor parents, living in a badly-drained and crowded house, if fed in hot weather from an ill-cleaned and sour-smelling bottle, is sure very soon to develop this form of diarrhœa. Dr. G. B. Longstaff says it is not so much the heat alone, as heat combined with drought, that gives its virulence to the disease—in fact, we find that the conditions which give rise to typhoid in the adult are those in which a severe diarrhœa is developed in the children of the population; therefore it seems likely—and this is the important point—that in many of the more serious cases of this form of diarrhœa there is a strong septic element in the illness. Dr. Eustace Smith says[a]:—"We often find a degree of nervous prostration quite out of proportion to the amount of purging—in fact, a state of exhaustion may continue after the diarrhœa has been arrested and end in death, although no looseness of the bowels has been noticed for some days."

Symptoms.—The affection often begins, as has been stated, in an attack of the mild form, but soon there is vomiting and rise of temperature, both the vomited matter and that passed from the bowel being acid and sour-smelling, the dejections containing much curd and undigested food. Soon the motions change their character and become thin and watery, brownish or greenish, and give out a most offensive odour; unless the large bowel is affected there is not much mucus passed. Nothnagel describes the motions as seen under the microscope as consisting of undigested particles of casein, fibres of meat, crystalline formations, epithelial cells, mucus and sometimes blood.

The general symptoms are very severe; the temperature generally reaches 102° or 103°; the child rapidly wastes; his eyes get hollow; his face very pale; vomiting is often severe and distressing; the pulse is rapid and feeble, and the buttocks are covered with erythematous redness, testifying to the irritating nature of the discharge. Too often these poor creatures have little care or nursing, and is it to be wondered at that their illness goes on from bad to worse, till a typhoid condition is reached, with dry, brown tongue, very high temperature, very rapid and feeble pulse, the child dying with all the signs of collapse.

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[a] On Disease in Children. 2nd Edition, page 629.

These symptoms will be modified according as the large bowel is principally affected, when you will have much pain and straining and a good deal of mucus and blood passed with or after the motion. In this variety also prolapse of the bowel is a common symptom. It is a question of great interest to ascertain the exact seat of the catarrh in these cases; and from a series of careful and laborious investigations carried out by Professor Nothnagel, of Vienna, who submitted to microscopical examination more than 1,000 specimens of catarrhal stools, we have gained the following information:—

If the catarrh affect the jejunum and ileum no mucus can be seen by ordinary inspection of the stools, but when a specimen is placed under the microscope islets of mucus are distinctly visible. We can then affirm positively that the catarrh is seated in the small intestine, and that the colon is healthy. If the mucus is tinted with bile pigment this indicates jejunal and duodenal catarrh, but in addition it shows there is increased peristaltic action of the colon and lower part of the ileum. In these cases the stools are always liquid, and bile can be demonstrated by Gmelin's test. Besides bile-stained mucus, cells of cylindrical epithelium, leucocytes, and fat-globules, all tinted with bile, can be observed. According to the same authority, if the small intestine is the seat of the affection, the urine is scanty and high-coloured, and indican is excreted in excess. This substance may be demonstrated by the following test:—

Add to the urine an equal quantity of fuming hydrochloric acid, and then with a pipette pour down a few drops of strong solution of chloride of lime; if indican be present the colour of the fluid becomes dark green or blue.

Treatment.—In all cases of this affection our first duty is to regulate the diet, and you will do well to prohibit milk at once, unless the subject be a baby at the breast, and the mother's milk is above suspicion, when there is no reason for its withdrawal. If, on the other hand, the infant be but a few months old, and hand-fed from the beginning, or just weaned—and I might here say that we often see this form of diarrhœa follow closely on weaning, under the name of weaning-brash—its life may depend on securing a wet-nurse, and this should be done, if possible, though it be only for a few weeks. If it is impossible, however, to get a nurse, you will do well to prohibit milk in every shape and form, and begin your treatment by substituting whey and cream, or whey and barley-water, or barley-water and cream in equal proportions, or you may try some of the prepared foods, as Liebig's, Mellin's, Nestlé's, &c., made fresh, and without milk. The condensed Swiss milk will sometimes succeed, but it often, in my experience, fails also. A hand-fed baby must be fed with whey and cream, or whey and barley-water, or barley-water and cream in equal proportions. This should be given cold, and in very small quantities at a time. Should this fail you—and it sometimes will, according to my experience—you might try weak veal or chicken-tea diluted with equal parts of barley-water or whey. If the child is weakly, or shows signs of depression, you can give white wine whey, made by adding a tablespoonful of good sherry to each cupful of whey, and of this it can have a tablespoonful every hour. In more obstinate cases still I can speak in the highest terms of raw pounded meat, or Valentine's meat juice; and I have repeatedly seen this agree and apparently rescue a child when everything else I have mentioned was of no service. Professor Whitla[a] speaks in the highest terms of Nestlé's food in these cases, and it ought to have a trial. He very properly directs that it should be made fresh each time. As to the use of drugs in this affection, every astringent known has been used, but I would advise a powder of—

Hyd. c. cret., gr. ½;
Bismuthi carb., gr. 2;
Sodii bicarb, gr. 2;
Pulv. Doveri, gr. 1. M.

Ft. chart. noct. maneque; and through the day the mixture I have already advised in the simple form. I have seen the very best results follow a starch enema at night, with two drops of laudanum added in those cases where there was much pain and straining and the passage of bloody mucus. Ipecacuanha is a useful drug in these cases also, and may be substituted for the laudanum in the foregoing enema, in the dose of 5 grains to ℥ii. of thin starch. It is also very valuable if you have severe vomiting, and may be given in two-drop doses of the wine in a teaspoonful of water every hour. Many other drugs are recommended, but I will not weary you further. When the flux has been completely arrested much benefit will follow the use of iron and quinine, with cod-liver oil after food. The child should be sent from home to a good bracing air, and be kept much out of doors.

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[a] Dictionary of Treatment.

Before leaving this subject I would like to sound a note of warning against the great danger of relapses from want of care in giving children things they cry for, such as sweet cakes, &c. I had within the last six weeks a severe and nearly fatal relapse produced by giving one biscuit in which currants formed a large portion of its composition. Again, oranges are often called for; and in the same category potatoes, all fruits, and vegetables, are to be strictly avoided.

3. The third variety of diarrhœa I have mentioned is infantile cholera, or cholera infantum, and in comparison with the foregoing classes it is rare, including about two or three per cent. of the cases of summer diarrhœa. It is almost never met with in breast-fed children, is never seen except in warm weather, and its exciting cause is to be found in almost every case in the food which has been given. Some of you will remember the important point emphasised by Dr. Byers,[a] that the milk as the child gets it from the mother's breast is absolutely aseptic, contains no germs, and is not submitted to any contact with the air in its passage from the breast to the stomach. In this lies the great secret of the immunity of breast-fed children from diarrhœa of any sort, and from cholera infantum in particular. In support of this many facts can be put forward. For instance, we know that cow's milk is the food of hand-fed children, and we know also that it is one of the best culture mediums for bacteria. Again, by the present method of handling cow's milk bacteria find ready access to it; and furthermore, living bacteria are always found in milk in the summer months in great numbers, and we know that milk is often allowed to remain for hours together in the summer at a temperature high enough for active bacterial development. In face of these facts, therefore, Dr. Whitla has certainly not put the case too strongly when he writes in his Dictionary that "sterilized milk is a perfect safeguard against ordinary summer diarrhœa, or the more severe cholera infantum." It has been established that epidemic cholera in the adult—a disease most closely allied clinically with cholera infantum—is due to a comma bacillus, and Vaughan has isolated from milk, which had been given to a child in which cholera infantum developed, a ptomaïn which produced vomiting and purging in a cat to which it was administered.

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[a] Dr. Byers' paper on Infant Feeding.

There is yet wanting sufficient evidence to establish the fact that any distinct form of bacteria yet examined is the cause of this or any form of the diarrhœas met with in children; but the foregoing facts, taken together, point very strongly to the belief that bacteria play a very important part in the production of all forms of diarrhœa, but particularly to that form we are now considering. We do not yet know positively by what avenue the bacteria gain access to the body, but the very close connection with the use of milk, and the fact that sterilisation is a safeguard leads to the presumption that in the vast majority of cases it is through this article of food. Bad drainage, and the effluvium arising from decaying animal matter, act probably as auxiliary causes in exciting this as well as the other forms of diarrhœa. It is more common during the first six months of life than at a late period of childhood; but older children are subject to attacks of summer cholera similar in all respects to the choleraic diarrhœa of infants. Boys are said to be more frequently attacked than girls, and the robust as often as the ailing and feeble.

Symptoms.—Whether the attack occur suddenly or come on gradually, the established disease has very marked features. There is obstinate vomiting, and very persistent diarrhœa, the vomited matter passing from the contents of the stomach to mucous fluid, thin watery fluid tinged with bile, or, it may be, pure bile itself. In like manner the dejections pass from the contents of the bowel to a thin offensive fluid, which consists largely of serum, and the quantities of this passed are often quite astonishing. As a consequence of this profuse drain from the stomach and bowels, it is not to be wondered at that the body wastes with alarming rapidity, so that but a few hours are sufficient to produce the pinched features and depressed fontanelle of this affection. The pulse is very rapid and thready, and the temperature is up to 104° or 105°. Unless a stay can very soon be put upon the progress of the disease, a state of profound collapse is reached, and, the coma increasing, the child dies quietly, or in a convulsion. The duration of this disease is very short, often only a few hours; always at the end of the fourth day the patient is either dead or getting better.

Treatment.—Professor Holt, of America, writes[a]—"All who have seen much of this affection must in candour admit that the results of treatment are extremely unsatisfactory, and that the severe cases pursue their downward course but little, if at all, influenced by treatment." This is a very strong statement, the more so as it emanates from a country where the disease is much more common than it is in this country, and expresses the views of one who has had great experience in its treatment. In the way of prophylaxis much can be done by using great care and attention in the preparation of all foods, and especially in thoroughly sterilising all milk used. In the same way all mild cases of diarrhœa should be taken in hand at once and treated, and not allowed to run on, on the score of being due to teething. The main indications for treatment in cholera infantum are—

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[a] Cyclopædia of the Diseases of Children. Vol. III., page 131.

1. To arrest the discharges.
2. To sustain the system.
3. To reduce the temperature.
4. To allay nervous symptoms.

I shall not attempt to enumerate all the drugs that have been recommended, but shall give you a few of the methods employed by our best authorities; and 1st, Professor Holt says that nothing has been so generally useful in his hands as the hypodermic injection of morphin and atropin. The effects need careful watching, and a small dose repeated is better than a single large dose. For a child a year old not more than $\frac{1}{100}$ of a grain of morphin and $\frac{1}{800}$ of a grain of atropin should be the initial dose, and you can safely repeat this dose in an hour, unless the vomiting and purging are arrested. Here, as in shock, morphin is our best and most reliable heart stimulant.

Henoch speaks highly of the free use hypodermically of a one-per-cent. saline solution. In the treatment of hyperpyrexia all drugs are useless, and the only means to be relied upon is the cold bath—the child being put in at 100° to avoid fright, and this gradually lowered with ice to 88° or 85°. Ice-water injections are a valuable adjunct to the baths.

Until the stomach ceases to reject its contents, it will be found worse than useless to attempt giving any food, and nothing but iced champagne or brandy in very small quantities is to be given. Even these are sometimes rejected, and then everything must be withheld, and stimulants used hypodermically, either brandy or ether being given freely. When the stomach shows signs of settling, Dr. Eustace Smith[a] would allow the child to drink rather freely of iced pure water, and this may be followed by white wine whey in teaspoonfuls, and this again may be improved upon by adding cream to the whey if the stomach keeps quiet. Milk in any shape, even breast milk, must be dreaded like poison in these cases. We must be on our guard for collapse, and be prepared to combat it with mustard baths, hot water bottles, and stimulants by either mouth, rectum, or hypodermic syringe. Dr. Harkin, of Belfast, would attack the course of the vagus nerve in these cases, and the method ought not to be lost sight of. He paints the course of the nerve in the neck with blistering fluid, and he reports very satisfactory results.

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[a] Ibid. Page 644.

From what has gone before, you will not be surprised to hear that drugs by the mouth are either impossible or very disappointing; but I think it right to say that French authors speak highly of nitrate of silver in doses of $\frac{1}{12}$ to $\frac{1}{8}$ of a grain three times daily. In milder cases, where the stomach will retain, I would be disposed to try bismuth and hippo. Mr. Walter Kilner relies on salicylate of lime in doses of 3 to 5 grains every three hours, and says the influence of this salt in controlling the purging, checking the vomiting, and reducing the temperature was very decided indeed. Another drug to which great value is attached is bromide of potassium. Enemata of starch and opium should be tried, and are sometimes beneficial. The greatest caution and nicety in supplying nourishment during convalescence will, I need hardly say, be required; and when the disease is quite gone those remedies which will suggest themselves to you as conducing to complete convalescence will find their proper sphere.

INFLUENZA AND BIRTH-RATE.

In 1890 the birth-rate in France was unusually low. In every department the number of births was less than in 1889. In Brittany, for instance, there were 71,867 births in the latter year, only 68,283 in 1890. In illegitimate births the falling off was 2,777. Dr. Bloch, of Paris, attributes the diminution of fertility to the prevalence of influenza. In Paris the epidemic was at its height in December and January, 1890; and its effect on the birth-rate would be apparent in September and October, 1890. In these months the weekly births in Paris ranged from 18·10 to 23·80 per 1,000 of population, the average ratio for the whole year being 26·90. In 1891 the figures for corresponding periods were 23·27 to 27·25. The figures for illegitimate births present similar relations. Calculating these per 1,000 unmarried women, between the ages of fifteen and fifty in 1890, the weekly variations in September and October, 1890, were from 32·99 to 44·97; in 1891, from 43·79 to 53·40.

PART II.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

A History of Medical Education from the most Remote to the most Recent Times. By DR. THEODORE PUSCHMANN, Public Professor in Ordinary at the University of Vienna. Translated and edited by EVAN H. HARE, M.A. (Oxford); F.R.C.S. (England); L.S.A. (London). London: H. K. Lewis. 1891. 8vo. Pp. 650.

PROFESSOR PUSCHMANN'S valuable work professes to be—and is, so far as we are aware—"the first attempt at a systematic exposition of the history of medical education." It covers a considerably wider field than its title indicates—and, indeed, the history of medicine occupies at least as much of the volume as the history of medical education. It is divided into four sections, treating of Medical Teaching in (1) Ancient Times, in (2) the Middle Ages, in (3) Recent, and (4) Modern, Times. The first deals with India, Egypt, the Jews, the Parsees, Greece, Alexandria, and Rome. The Middle Ages occupy about one-fifth of the book, and in this section there are several matters of special interest to be noticed.

The first chapter is devoted to the influence of Christianity on Medicine. It must be admitted that the depreciation of the body, and of earthly things in general, which early Christianity encouraged and enjoined, was unfavourable to the study of the natural sciences and of theoretical medicine. Practical medicine, on the other hand, owed much to the institution of hospitals and asylums which necessarily followed upon Christian teaching; although it is a mistake to suppose that the public hospital is an exclusive product of Christianity—Buddhism possessed such institutions. In ancient Greece iatreia—some private, some maintained at public cost—were practically public hospitals. The Romans had convalescent establishments for slaves and for soldiers. The Spaniards found hospitals in Mexico. Christianity "kindled into a clear flame of enthusiasm the sparks of true philanthropy which she found glowing in obscurity;" and the hospital was one of its most beneficent results. In Rome the first Christian infirmary was founded by the widow Fabiola at the end of the fourth century. Leprosy, under which many loathsome skin-diseases were included, excited Christian compassion in an especial degree, its victims being objects of disgust and avoidance; and special wards and special hospitals for lepers were opened in many cities.

In one important particular Christian teaching and practice in the Middle Ages were inferior to Muhammadan, and the difference was the direct result of difference in religious beliefs. They agreed in regarding the hallucinations, delusions, and incoherencies of the insane as manifestations of supernatural influence; but while the Mussulman considered such symptoms to be signs of divine favour, in the eyes of the early Christian they were divine punishments, worked by the agency of evil spirits. Accordingly, while the Christians treated the insane as criminals, imprisoned them and beat them—sometimes tortured and slaughtered them as wizards and witches—the Muhammadan received them into hospitals, and tended them with kindness. "In Baghdad and Cairo institutions for the insane existed long before it was thought of erecting them in the lands of Christendom, and the first in these lands arose in Spain, the intellectual development of which country was greatly influenced by Arabian civilisation."

Two mediæval Universities—at Salerno in Lower Italy and at Montpellier in France—appear to have been primarily schools of medicine, with other faculties more or less loosely attached; while elsewhere the universities consisted of a group of philosophical faculties, of which medicine might be one. The origin of the School of Salerno, probably due to the influence of the Sicilian Arabs, is the subject of much speculation; but it is known that in the tenth century its fame was widely spread. Historical evidence goes back to the middle of the ninth, but in the tenth Salernitan physicians are found taking a high position at foreign courts, and distinguished foreigners visited the Italian town for medical advice. Favoured in situation and climate, and stimulated intellectually by concourse of Romans and Greeks, Lombards, Arabs, and Normans, Salerno, even at this early period, produced or attracted learned and successful teachers, students in search of knowledge, and patients in search of health. Here women were allowed to teach, and one of them, Trotula, was the author of works on obstetrics, gynæcology, and pathology; and her colleague, Abella, wrote a treatise—"De Naturâ Seminis Humani." The professors' lectures were open to all students, male or female, native or foreign, of whatever creed. We have some knowledge of the method of teaching pursued at this time. Anatomy was taught on the pig, but appears to have been limited to opening the great cavities and demonstrating their contents. It is uncertain whether clinical instruction was given, but a public hospital had been founded in Salerno in 820 which was connected with the Benedictine monastery, and other orders maintained infirmaries and other charitable institutions. Text-books were not wanting, and one of these by Archimatthæus is described by our author as "a strange mixture of valuable medical experience, deep piety, and sly calculation." It gives—

> "Complete advice as to how a doctor should comport himself on visiting a patient. He should place himself under the protection of God, and implore the assistance of the angel who guided Tobias. On the way to see the sick person he should question the messenger who has summoned him upon the circumstances and the conditions of the illness of the patient. Then, if not able to make any positive diagnosis after examining the pulse and the urine, he will at least excite the patient's astonishment by his accurate knowledge of the symptoms of the disease, and thus win his confidence. The author also considers it a matter of great importance that the patient should confess to the priest before the doctor comes to him; for, 'if mention is afterwards made of this matter the patient believes that there is no hope for him.' 'When the doctor enters the dwelling of his patient he should appear neither haughty nor covetous, but must greet him with a modest demeanour, and then seat himself near the sick man, accept the drink which is offered him, and praise in a few words the beauty of the neighbourhood, the situation of the house, and the generosity of the family, if it should seem to him suitable so to do.' 'When the doctor quits the patient, he should promise him that he will get quite well again, but should inform the friends that he is very ill; in this way if a cure is effected the fame of the doctor will be so much the greater, but if the patient dies people will say that the doctor had foreseen the fatal event.'"

In 1140 a system of examinations was organised,[a] and in 1242 the Emperor Frederick II., of the Hohenstaufen family, issued a complete set of rules for medical studies. He prescribed that

[a] The penalties for unqualified practice laid down in this order of King Roger's were severe:—Quisquis admodo mederi voluerit, officialibus nostris et judicibus se presentet, eorum discutiendus judicio: quod si suâ temeritate presumpserit, carcere constringatur, bonis suis omnibus publicatis. Hoc enim prospectum est, ne in regno nostro subjecti periclitentur ex imperitiâ medicorum.

three years' study of logic should precede medical education, "since it is possible for a man to understand medical science only if he has previously learnt something of logic." The professional course extended over five years; but even after this the graduate was enjoined not to practise yet upon his own account, "but for a full year more he should habitually consult an older practitioner in the exercise of his profession." The doctor was forbidden to enter into a partnership with an apothecary, or keep an apothecary's shop.

During the eleventh and twelfth centuries the School of Salerno flourished vigorously. In 1252 an attempt, only partially successful, was made to enlarge it into a university, in which other subjects than medicine should be taught; but a few years later the University of Naples was restored, and Salerno resumed its position as an exclusively medical school. As other schools arose Salerno continuously declined, and on the 29th Nov., 1811, a decree of the French Government finally extinguished the oldest medical school of Europe.

The origin of the Montpellier School is also involved in obscurity. In 1137 Bishop Adalbert, of Mainz, found the School established, with buildings of its own, and sought instruction from its professors. In 1180 the reigning count, William IV., threw open the right of teaching to "omnes homines quicunque sint vel undecunque sint." Such license produced irregularities and a desire in teachers and students for a code of rules, and in 1220 these were supplied by the papal legate. Ten years later physicians were forbidden to practise, under pain of excommunication, until they had passed an examination by two doctors nominated by the bishop. Surgeons needed no such qualification. In 1240 the School was completely organised, after the model of Salerno. In 1289 Pope Nicholas IV. founded a university at Montpellier, but the medical school preserved its individuality and independence. Louis XIV. attempted to enforce the union of the medical faculty with the other faculties, but encountered such opposition from the former that he was compelled to withdraw his decree. Every medical student at Montpellier had, after graduating in arts, to attend lectures in medicine for five years, and to practise "for eight months or two summers at least" before he was admitted to the degree of Master of Medical Science. It was in the thirteenth and fourteenth centuries that this School attained its greatest celebrity. As other schools were founded Montpellier waned.

The course of medical study was nearly uniform in the various mediæval universities. In most a degree in arts, or attendance on lectures in the philosophical school, was an indispensable preliminary to the study of medicine, which lasted four or five years. After two or three years a degree of bachelor was obtained by examination, and in two years the licence to practise. The teaching was almost wholly theoretical.

We have seen that Salerno taught anatomy on pigs; in other schools the bear, the monkey, and especially the dog, were used. Few opportunities for the dissection of the human subject were obtainable. Mondino, of Bologna, indeed, performed many such dissections; but his work on anatomy shows no advance upon the knowledge of Galen's time, although it was for 300 years the principal text-book on the subject.

Examinations for qualification to practise followed at first the model established at Salerno by the Emperor Frederick II. Gradually, however, Bologna and Paris setting the example, the single examination, at the termination of the educational course, was replaced by three tests—for the degree of bachelor,* for the license to practise, and for the degree of magister or of doctor. These latter degrees were introduced at Salerno and Naples by Charles of Anjou about 1280. At first qualified practitioners of medicine were styled magistri, but when the jurists of Bologna assumed the title of doctor, it passed into the medical faculties also—primarily applied to those who *taught*. The title was subsequently extended to all practitioners of medicine, and those who taught came to be called professors. Anyone qualified to practise could become a Doctor of Medicine without further examination, but other conditions were to be fulfilled. The candidate should be at least twenty-six years of age—in some universities twenty-eight—of honourable and legitimate birth, respectable, undeformed. Misshapen and repulsively ugly persons were excluded, for the eminently practical reason that the sight of them by pregnant women might injuriously affect the fœtus, there being no doubt about "maternal impressions" in those days. Every doctor received at graduation a cap[a] and a pair of woven gloves.

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* Professor Puschmann repeats the old guesses at the origin of this title, for which, so far as we are aware, there is no authority of any kind. The word *baccalarii* is, he says, associated with *baculum* by some commentators, because a stick *is said* "to have been handed to the bachelors presumably as a token of their new dignity." He prefers the equally problematical derivation from *bacca lauri*, which "recalls the crowning of poets with the laurel wreath"! The true derivation is given by M. Bourdillon in a note to his edition of the charming idyll, "Aucassin and Nicolette." He points out that the word *bacelor*, Anglice *bachelor*, underwent several changes of meaning. Originally *baccalarius* was the owner of a *baccalaria*, a farm; from *bacca*, the mediæval form of *vacca*—a vassal of inferior rank, but higher than a serf. Possibly from its likeness to *bacele* or *bachele*, a young girl of lower rank (a different word of Celtic origin), the idea of youth became associated with it, and it came to mean a *youth*, and especially one too young to be a knight; in this sense it is used in "Aucassin and Nicolette." Subsequently it came to mean the *lowest order* of *knighthood*, and in this meaning it survives in the University of Dublin, where bachelors are styled "Dominus" and "Sir." Chaucer uses the word in this sense.

It was not until the thirteenth century that a surgical profession began to form. "It was composed of doctors and licentiates of medicine, who had strongly pronounced inclinations or gifts for surgery, of practitioners to whom the acquisition of an academical degree was denied on religious or social grounds, and of a multitude of empirics who had acquired a remarkable dexterity in the treatment of surgical ailments." In 1416 a separate faculty of surgeons—the Collège de St. Côme—was organised in the University of Paris, in which a scientific education fully equal to that of the physicians was given. The clergy held aloof from it, and the medical faculty opposed it bitterly. The latter had previously (1350) forbidden its members and students to practise surgery in any form, and in 1372 gave barbers the privilege of practising phlebotomy and minor surgery, striving, not ineffectually, to lower the boundary between the surgeons and the barbers, Up to the beginning of the eighteenth century the struggle between the two branches of the profession was carried on in Paris with great acrimony.

We shall conclude our notice of the Mediæval Section of Professor Puschmann's work with an extract illustrative of the state of surgery in Germany in the twelfth century:—

> "When the Margrave Dedo von Rochlitz und Groix had to accompany the Emperor Henry VI., in 1190, to Italy, he feared the hot climate and the fatigues of the journey on account of his corpulence; he summoned a doctor, who straightway laid open his body in order to extract the fat. It is not surprising that the Margrave sank under this singular operation. In 1195 Leopold V., Duke of Austria, broke his leg through a fall from his horse, and in such a way that the broken ends of the bone protruded through the skin. His doctors treated him with plasters and medicines until mortification set in. They refused to submit the limb to amputation, although the patient desired it. One of his servants at last performed the operation, but the result, as might have been expected, was unfavourable. The duke died on the following day."

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[a] Hence graduation is still called "capping" in Edinburgh and elsewhere.

We have dwelt, perhaps, too long upon the mediæval period of medicine and medical education; but we plead in excuse that it is the period of which least is generally known. Our waning space warns us that we must pass lightly over the third section of Professor Puschmann's work, which is devoted to Recent Times. From the mass of learned lore which our author's industry has brought together in his chapter on the progress of medical science in post-mediæval times, we can notice but two subjects, and them briefly. Gaspare Tagliacozzi, a Professor at Bologna, in the sixteenth century brought plastic operations almost to perfection, and in his "De Chirurgia Curtorum per Insitionem," has left us a complete account of his procedure. He took the skin from the upper part of the arm.[a] Syphilis kept him busy, and a ponderous joke related that he had at one time in his hospital 12 German counts, 19 French marquises, 100 Spanish grandees, and 1 English esquire—all waiting to be re-nosed. Other subjects than syphilitic patients abounded. The Emperor Frederick III. decreed that adulteresses,[b] and mothers who prostituted their daughters, should lose their noses; and the municipal law of Augsburg, at an earlier time (1276) decreed that "vagrant girls" "should have their noses cut off if they roamed about the streets during Lent or on Saturday night, except when distinguished foreigners were present in town."

Tagliacotius' efforts to restore lost noses and lips gave deep offence to the religious world of his day. He was presumptuously interfering with the designs of the Almighty. The sisters of the convent where his body was laid, heard for several weeks a voice crying "Tagliacozzi is damned;" and the clergy had him disinterred, and removed to unconsecrated ground. History repeats itself, and in this "so-called nineteenth century" attempts to mitigate the syphilitic plague, and to diminish the pains of childbirth, were opposed by similar "arguments."

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[a] That is, of the patient's own forearm. The ingenious Mr. Samuel Butler was deplorably ignorant of Tagliacozzi's procedure:—

> "So learned TALIACOTIUS from
> The brawny part of porter's bum
> Cut supplemental noses, which
> Would last as long as parent breech;
> But when the date of Nock was out,
> Off drop'd the sympathetic snout."
>
> —Hudibras. I., 281.

It will be remembered that this idea forms the *motif* of About's amusing story, "Le Nez d'un Notaire."

[b] In some parts of India, at the present day, amputation of the nose, and sometimes of the lips, is an ordinary "domestic remedy," administered by injured husbands.

Another name which stands out prominently in the medical history of the sixteenth century is that of Theophrastus Bombastes Paracelsus.[a] To most of us, perhaps, he is best known as having added part of his name to modern European languages; and his defects have obscured his merits. He was the first to recognise the chemical nature of vital processes. He denied the ancient doctrine that the heart is the source of animal heat, maintaining that each part of the body supplies its own heat. He saw the analogy between gout and calculous diseases, and recommended alkaline treatment for both. He added some forms of mercury, some salts of lead, antimonial medicines, precipitated sulphur, cupric sulphate, ferric oxide, and other preparations of iron to the practitioner's repertory. He observed the toxic effects of mercury and of arsenic in mining and smelting; he took chemistry out of the hands of the alchemists, and applied it to the search, not for gold, but for health. He laid the foundations of medical chemistry.

In the seventeenth century the growth of the "scientific spirit led to the foundation of learned societies and of universities. In 1603 the Academia dei Lincei was founded," said to derive its fanciful name, and its crest—a lynx—from the keenness of its members' scientific insight; it is still the leading learned society of Italy. In 1657 the Medici established the Florentine Academia del Cimento for experimental research. In 1666 the Académie des Sciences—since 1793 the Institut National—and the Royal Society were founded. In Germany academies and universities came up like mushrooms, every petty State establishing at least one for itself. With double the population Germany of to-day finds half the number of such institutions sufficient. Even in the eighteenth century they were poor things, the best of them. Taking medical studies as a test, "in Vienna there were only 25 medical students in the year 1723, in Göttingen from 50 to 80 during the period between the years 1767–78; Jena, in 1768, numbered 17, and in 1773, 42 students of medicine." These figures are contrasted with 400 medical students in Edinburgh in the latter half of the eighteenth century, 300 in Leyden in 1709, 1,400 in Padua in 1613 (a "bad year"), 200 in Pavia in 1782.

We are compelled to pass over the very interesting chapters in which our author details the progress of medical education in the eighteenth century, and the gradual rise of the surgeon to respectability and equality with the physician. The present state of medical teaching is fully described in the fourth section of the work, occupying nearly one-third of the whole. The book concludes with a short chapter headed "Final Considerations," in which general questions pertaining to medical education are discussed. Professor Puschmann, while fully recognising the educational value of the study of Greek and Latin, is clearly of opinion that too many years of boyhood and youth have hitherto been devoted to it, and that other branches of knowledge—"especially mathematics"—are equally suitable for the cultivation of the intellect as a preparation for professional studies. Minds differ, and preliminary education should vary according to individual proclivities. He is of opinion that the medical student "ought to bring with him from school as much knowledge of the natural sciences as shall render it unnecessary for him to apply himself to the elements of mineralogy, botany, and zoology at the university; he must here confine himself to reviewing these sciences in their relations to medicine." Physics and chemistry should be reserved mainly for university teaching, school appliances being necessarily inadequate to effective study of these indispensable subjects. Anatomy and physiology are the "pillars which support the whole structure of medical education." Embryology is included in this part of the course, and balneology is one of the subjects which should precede clinical teaching. Knowledge of midwifery is to be gained "in the obstetric clinic and by means of operations performed on the model."[a]

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[a] Born in 1493; died, 24th Sept., 1541.

The number of subjects reserved for the closing months of the students' course is very great—diseases of the mind, of the nervous system, of the skin, of the sexual organs, of the larynx and ear, of children, forensic medicine, hygiene, sanitary control, medical legislation, medical statistics, veterinary science and comparative medicine, medical geography, and the history of medicine. The *fin de siècle* medical student will have his hands full, and his head.

The choice of lectures is considered, and the question whether the student should be left absolutely free to get his knowledge how and where he pleases *from lectures* is answered negatively; but the possibility of appearing for qualifying examination without having attended any lectures, if the candidate so pleased, is not even mentioned, and yet, we have known schools in which attendance upon lectures was not compulsory, although payment of fees was. The practice of occasional questionings of the class, and of holding a "disputation," or discussion each week, is recommended. The latter would not suit our ways; but the former we know to be an excellent aid to instruction.[a] This method is followed in the military medical schools of Germany, and in some university schools other than medical. The final examination for the license should be of the most practical description, and should include a *vivâ voce* test extending over all branches of medical knowledge.

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[a] This reminds us of the dictum of an American Professor—"You might as well practise passing a catheter on the village pump as learn midwifery on the phantom."

We have given many pages to this important work, but not more than it deserves. It is a little behind the times where Dublin is concerned; but it is full of accurate information, and references to authorities are carefully supplied.

The Anatomical and Histological Dissection of the Human Ear, in the Normal and Diseased Condition. By Dr. Adam Politzer, Professor of Otology in the Imperial Royal University of Vienna, &c. Translated from the German by George Stone. Illustrated. London: Baillière, Tindall, & Cox. Pp. 270.

It should be pointed out at the beginning that this is not a work on the anatomy and diseases of the ear, or on aural pathology, but an exhaustive guide to the method of making preparations of the organ of hearing for the objects of anatomical, physiological, or pathological investigation, together with a complete account of the anatomy of the parts, and of the appearances and conditions to be sought for in making *post-mortem* examinations of diseased ears.

We have rarely read a work which is so thorough and so complete. It leaves on one's mind the impression that its writer is a perfect master of his work, and one who has laboured at every tittle of his subject, every corner of the organ, with knife and needle, time after time until he has become thoroughly acquainted with it in its minutest details and variations. After the thoroughness of knowledge exhibited in the work, perhaps the most notable thing is the wonderful amount of detail with which the subject is treated. Every little bit of the organ of hearing and its accessories is taken up separately, and examined—as a rule in both fœtus, and adult—anatomically and pathologically. For instance, regarding the tympanic membrane, we find the following sections or chapters:—1. Separation of the membrana tympani with the malleus and incus from the pyramid of the petrous bone, 4½ pages; 2. Preparation of tympanic membrane (macroscopic), 2 pages; 3. Loosening of the tympanic membrane from the sulcus tympanicus, 2 pages; 4. Exposure of the duplicatures on the inner surface of the membrana tympani, 2 pages; 5. Preparation of the membrana Shrapnelli, 1 page. Under each of these headings the examination of the part pathologically is given immediately after the anatomical method. Then in the division of the work devoted to Histological Examination we find the following:—1. Histological examination of the membrana tympani on surface preparations, 4 pages; 2. Histological examination of the membrana tympani on sections, 8½ pages (including section of membrane and handle of malleus, horizontal and vertical); and also examination of the membrane in pathological cases, besides numerous incidental references to the appearance and condition of the membrane found through the book. It must be understood that this profusion of detail is not given in the case of the membrane alone; every portion of the organ is treated in the same complete method.

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[a] In a school with which the writer was for many years connected, one teaching day in every three was, by express rule, devoted to examination, oral or written, of the class. It may be added that attendance upon every lecture and examination unless in case of illness, was required.

The plan of the book is as follows:—First come a chapter on instruments and one on the removal of the organ of hearing from the dead body. This second chapter of 17 pages contains many valuable hints for those interested in the practical study of the pathology of the ear. Next come the various dissections of the macerated temporal bone—fœtal, infantile, and adult. Then the anatomical and pathologico-anatomical preparation of the recent organ—auricle, meatus, membrana, tympanum, ossicles, muscles, ligaments, Eustachian tube, mastoid region and labyrinth, in all its details. After this come Topographical Sections for instruction purposes; next a chapter, which is most complete, on corrosion preparations of all parts of the ear. The first part of the book is completed with an account of the methods of mounting and preserving anatomical and pathological preparations of the ear, which is replete with valuable information. The second part is devoted to the histological examination of the ear, normal and pathological. The first twenty pages are devoted to methods, re-agents, &c.; then follow chapters on the different parts of the organ in the order pursued in the macroscopic division of the work. The last chapter is devoted to the histological examination of the central course of the auditory nerve. Complete accounts of the literature, and of the authors referred to, complete the book.

It is unnecessary to criticise the work in detail; we have already given our opinion that it is probably more complete in its way than any book we have read on a medical subject. Information on every part of the organ of hearing will be found in its pages, and to it one may always turn with the certainty of finding any troublesome question which may arise in connection with the structure of the ear fully treated. We need hardly say that the information contained in the work is of the highest order, coming as it does from probably the greatest living authority on the region. It is right to add that in our opinion the information and detail are too full, and perhaps somewhat too complex in some parts for any but specialists on the ear, or for those working deeply at the part; but for these the book is certainly a treasury of information. There are 165 illustrations, nearly all original, some of them a trifle rough, but nevertheless thoroughly effective—in fact, the illustrations form a very valuable part of the work.

The translator deserves a word of praise for the care with which he has done his share of the work. Evidently through a desire to be exact in his translation, and to follow the original as closely as possible, his sentences occasionally become a little involved. But on the whole the wording is sound, though not quite as readable as one might desire; indeed we might add that we found the book a rather heavy one to read through.

Before we conclude we would wish to draw attention to some of the simpler methods given for removing the ear from the skull in *post-mortem* examinations without external disfigurement. They may be new to some.

1. To remove the internal ear, tympanum, membrane, and deeper part of meatus, without the Eustachian tube and naso-pharynx—that is, the petrous portion of the temporal—when the brain has been previously removed. This is an extremely simple operation, which can be completed in a few minutes with the aid of two chisels—one about 1¼ inch, the other ¼ inch in width. The wide chisel is driven down through the base, along the line of the inferior petrosal sinus, from the apex of the petrous to the jugular foramen; it is sent through a second time along the back of the petrous, from the

jugular foramen to the groove on the mastoid for the lateral sinus. The third cut is made with the narrow chisel in an antero-posterior direction across the petrous at its outer limit. The fourth cut with the wide chisel, transversely in front of the petrous just posterior to the foramen ovale. The fifth and last cut with the wide chisel must be made with the greatest care, as the bone is here thin and liable to crack, it is to connect the ends of the third and fourth cuts. The petrous is then raised with an elevator introduced behind, and the inferior connections cut through. Very little practice will render this method quite simple.

2. A second method aims at removing both ears together. The detail of this method would take up too much space if described in full, but the principle of the method may be sketched. After removing the brain, a drill is sent down at a point about half inch external to the crista galli; the drill goes on until it perforates the hard palate, then a stout, narrow saw is introduced through the drill hole, and a saw-cut is made, which, starting here, runs backwards and outwards until the petrous is reached, then it runs out to the side wall of the skull in front of the petrous, next it passes back through outer part of petrous into groove on mastoid, then in along back of petrous through jugular foramen to middle line; a similar cut is made on the opposite side, and by special manipulations the parts included between the two cuts are freed and separated. This operation is more troublesome than it seems to be on paper, but it allows of the removal of the naso-pharynx and Eustachian tubes—a decided advantage in many cases.

In the foregoing methods the brain is first removed, and it is recommended that the skin incisions from ear to ear should be made *not over the vertex but across the occipital region*, so that no trace of it may afterwards be visible. The following is an ingenious method devised for removing the two ears without taking out the brain, and without visible disfigurement:—

3. An incision 3 or 4 inches long is made through the scalp on each side, extending up behind the ear from the mastoid process; the soft parts in front and behind this are freely separated from the bones, so that the incision may be drawn forwards or backwards. A specially devised long drill is sent through the skull on one side 1¼ inches above the meatus, and continued through the cranial cavity and through the same point on the opposite side; next the narrow blade of a special frame-saw is introduced through the hole, and then set in its frame. The saw is worked transversely,

passing at first forwards, then downwards, backwards, cutting round a transverse axis running through the two meatuses, until a cylindrical piece with an ear at each end is sawn out of the head. This piece can be more easily removed if the piece be not perfectly cylindrical, but instead somewhat cone-shaped, when it may be readily drawn out at the wide end.

Many other equally interesting subjects abound in the book, but we have selected these in the hope that they may be of some use to medical men who are anxious to obtain the parts in cases of ear disease.

Everyone interested in the advanced anatomy of the ear, or in the *post-mortem* examination of diseased ears, should possess the book.

Lectures on Pathology. Delivered at the London Hospital. By the late HENRY GAWEN SUTTON, M.B., F.R.C.P., Physician and Lecturer on Pathology at the London Hospital, &c. Edited by MAURICE E. PAUL, M.D.; and Revised by SAMUEL WILKS, M.D., F.R.S. London: J. & A. Churchill. 1891. Pp. 503.

THE present volume has been compiled from several courses of Dr. Sutton's lectures, of which some were taken down verbatim in shorthand, and in the case of others notes were taken, and written out as far as possible in the lecturer's own words. A few of these lectures Dr. Sutton had carefully revised for publication, but this work of revision was interrupted by his death. The remaining lectures, therefore, are published practically as they were delivered to the students, Drs. Paul and Wilks believing—and, we think, rightly—that it was only their duty to alter Dr. Sutton's words in the few instances in which the sense was obscure.

Dr. Sutton was a physician of great experience, endowed with rare powers of observation at the bedside as well as in the *post-mortem* room. He was no mere pathologist, highly skilled indeed in microscopic work, but more familiar with the life-history of bacteria than of human beings. Hence it comes that we find these lectures treat of far more than pathology pure and simple. "Pathology," says Dr. Sutton, "teaches the maxims of rational practice;" and in this book we find them inseparably connected. The symptoms—or, to use Dr. Sutton's expression, "the suffering"—during life are explained by the lesions found after death, and in many cases the pathological reasons for certain lines of treatment are given. In fact, the work might as appropriately be called Lectures on Clinical Medicine; nay, more, we think that Lectures on Clinical Medicine would have been a more appropriate name, for to our mind the chief merit of the book consists in the keen observation of clinical phenomena and in the shrewd and epigrammatic remarks in which Dr. Sutton has embodied his experience; whilst, on the other hand, the pathological part of the work appears the poorest and least valuable.

The work consists of 52 lectures: a few on general subjects, as Inflammation, Struma, Anæmia, but nearly all on definite diseases—Typhoid Fever, Small-pox, Intra-thoracic Tumours, Cirrhosis of the Liver, &c. From the point of view of clinical medicine many of these are admirable. Dr. Sutton's language is forcible, to the point, and easily remembered; and few will read his words without finding some familiar subject presented in a wholly new and unexpected form. Thus, in speaking of the attacks of dyspnœa in cases of thoracic aneurysm, he says:—"In the still night, when the body is cold and in darkness, the breathing becomes more and more depressed. In the terrible darkness of loneliness, for loneliness is darkness, it is then that fear must come up to paralyse the right side of the heart, so that not enough blood is sent through the lungs. That is why these patients suffer from dyspnœa at night."

Again, "Doctors who look too much at the dead side of disease are apt to give too gloomy prognosis; they have seen so much of what disease has done, and they cannot trust the human body. But every year I am more and more impressed with what the human body can do." "A saccular aneurysm may have a wide opening of communication with the aorta or a narrow one. The narrower the opening, the greater the chance of cure. The narrower the opening, the greater the amount of noise, and the better the sign. If then you are asked whether an aneurysm with a bruit or an aneurysm without a bruit is more ominous, the answer should be, an aneurysm without a bruit."

But when we pass from such short, pithy statements as these to the purely pathological parts of the book, we must confess we are much disappointed. Dr. Sutton seems to have a great tendency to use abstract instead of concrete terms, and to cloak ignorance in obscure phrases. We will give a few examples of what we mean:—"It has been suggested that ulcer in the stomach is due to thrombosis. I can only tell you that I have often taken up a stomach and seen the veins more or less plugged, without a trace of simple ulcer; but it might be replied that there is no similarity in such conditions, that with simple ulcer there is *a localised death in the blood*, and owing to the anæmia also much failure of nervous energy, tending to death in the tissues." "What is the heat in inflammation due to? The heat is due to the *excessive accumulation of energy in the part, an excessive accumulation of power which, if it does not get vent, will destroy.*" "Another extremely common condition producing inflammation is degeneration of the tissues themselves, or *a morbid fixity of the tissue forms, leading to obstruction to the circulating material*, and hence imperfect nutrition of the tissues." (The Italics are ours.)

Again, in other places, we find statements much too strong for scientific accuracy. "The blood in leucocythæmia under the microscope seems to contain only white blood corpuscles—*we can see no red ones.* There really are very few red corpuscles." A student could not help taking a very misleading idea from this sentence. Other instances illustrative of these various points could be easily multiplied.

We have thus formed no very high opinion of these lectures from a pathological point of view, but as a record of the clinical observations of a physician who knew how to express his thoughts in a few striking words, they are valuable, and will bring before the reader's mind many new and suggestive ideas.

The Nursing Directory for 1892. London: The Record Press, Limited. 1892. Pp. 98.

This is drawn up on the plan of the well-known "Medical Directory," the names being arranged under London, Provinces, Scotland, Ireland, Abroad. It contains names only of nurses registered by the Board of the Royal British Nurses' Association, and many of these do not appear, as they neglected to fill up the requisite forms. After each nurse's name are inserted the names of the places where she was trained and the distinctions she attained. The most interesting part of the book is that dealing with training schools, which also gives a short abstract of terms and conditions. Some amusing items are noticeable. For instance, under the heading of "Liverpool Royal Infirmary and Lock Hospital—292 beds," we read, "The object of the institution, which only gives one year's training, and takes the nurses' earnings for two years afterwards, is stated to be 'the encouragement of unselfish and disinterested exertion on the part of the nurse.'" It might be well to add a second object, viz.—"The encouragement of hard labour for the managers and trustees."

Traitement des Maladies de la Peau; avec un Abrégé de la Symptomatologie, du Diagnostic et de l'Étiologie des Dermatoses. Par le DR. L. BROCQ, Médicin des hôpitaux de Paris. Deuxième Édition, corrigée et augmentée. Paris: Octave Doin. 1892. 8vo. Pp. 894.

A SECOND edition, which is revised and enlarged, and still contained in smaller compass, is a paradox in book-making and a veritable curiosity in medical works. Yet, such is the case in the book before us. The secret lies in the omission of many of the examples of polypharmacy which overloaded the previous edition, and in the condensation of some of the longer articles. By these means room has been found for the insertion of several new articles, and the scope of the book has been somewhat widened, while the actual number of pages is less. This is a step in a good path—one we trust many English writers may see fit to follow. The mysteries of French pharmacy have been carefully revised by M. Portes, Chief Pharmacist to l'Hôpital St. Louis in Paris, so that in this we have a guarantee that if English chemists can follow in his footsteps the results will be scientifically accurate and, at the same time, agreeable to our patients.

M. Brocq is one of the younger school of French dermatologists, and has shaken himself free from the empiricism and theories of the older school, and has accordingly produced a work which is a real addition to the literature of the subject. It is indeed one of the few rational books on dermatology which have emanated from the French schools, and we are no longer plagued with the mysteries of "dartres," "herpétisme," "arthritisme," &c., but are furnished with a full and accurate account of the views and teaching of the younger and more advanced thinkers. Yet, what an upheaval of ancient superstition is evidenced in the simple line with which M. Brocq dismisses the subject—Dartre. "Le mot Dartre n'a plus à l'heure actuelle de signification précise!"

The subject is treated in dictionary form, a method which obviates the necessity of adopting any classification, a decided gain in dealing with a group of diseases admittedly difficult to classify in a satisfactory manner, and possessing besides the advantage of simplicity of reference. Though M. Brocq designates his work "The Treatment of Diseases of the Skin," it is not to be imagined that the ætiology and diagnosis are therefore neglected. These are, in many instances, treated in the most full and complete manner, notably in the parts dealing with such subjects as acne, the varieties of eczema, lichen ruber, the erythematous group, and others of equal importance. But in every case, no matter how fully or concisely stated, the leading features of the disease are put before the reader with a graphic minuteness of detail and description that could be accomplished only by one possessed of the keenest observation and widest practical experience. Two excellent sections—not generally included in works on dermatology—deal with affections of the mouth, including the various forms of glossitis; and with diseases of the vulva, specially those most incident to children. Under the heading "Peau," the author wisely omits the chapter (often inaccurate) on the histology and physiology of the skin, which he considers quite out of place in a work of this character, and gives in a few pages some most excellent remarks on the hygiene and care of the skin—only we would insist on the universal bath being a daily, and not a weekly or fortnightly performance. Perpetual youth would certainly be earned by anyone who carried out fully the six concluding injunctions. In order to give an idea of the care and accuracy of M. Brocq's writing, we here translate his description of the disease known by the name of Kaposi—*Xeroderma pigmentosum.*

"It appears first in the summer as patches of red colour, similar to those caused by exposure to the sun, and seated on those parts of the body which are ordinarily uncovered—face, neck, hands, and fore-arms. To these red spots succeed pigmented patches of a fawn colour, which in some cases appear to be the primary lesion. Once they have made their appearance the spots grow deeper in colour, increase in size and in numbers; it may thus happen that they become confluent, and they invade parts which are usually covered, as the chest. This is the *first stage of development.*

"In the *second stage* the skin becomes dry and raised in ridges, and the epidermis separates in fine furfuraceous flakes. Trophic lesions follow: Pustules resembling those met with in impetigo, superficial ulcers covered with crusts are followed by the formation of scars which, at first of a vivid red, subsequently grow pale and become the seat of teleangiectases which ramify dendritically or form star-like tufts of vessels. These white cicatricial patches extend gradually, while the skin becomes very thin and tense, but without adhesion to the deeper parts.

"In the *third and last stage*, which may be delayed for a very long period, there are developed on the larger pigmented patches, and sometimes on the red cicatrices, small warty nodules covered with horny epidermis. Some of these undergo a striking development, fungate and ulcerate, while others become pedunculated and drop off spontaneously, leaving a wound which heals with formation of a scar. Others again become the seat of deep ulcerations, which invade the underlying tissues and exhaust the sufferer, either by the profuseness of the discharge or by the generalisation of the epithelial growths. According to some authors these tumours are not always of an epitheliomatous nature; they are at times angiomyxomata or sarco-carcinomata. (?)

"Sex has no influence on the occurrence of this affection. It usually attacks several members of the same family, and in a family those of the same sex. Exposure to the sun seems to be occasionally an exciting cause."

This minuteness of detail and closeness of observation show the pains which have been bestowed to make the book worthy of the school from which it emanates.

The paper and type are excellent, and we can cordially recommend it to all who are interested in the study of skin diseases.

The Leeward Islands Medical Journal, being the Proceedings of the Leeward Islands Branch of the British Medical Association, 1891. Edited by H. A. ALFORD NICHOLLS, M.D., F.L.S.; Ch. M. Aberdeen; M.R.C.S.E.; Corresponding Member of the New York Academy of Sciences. London: J. & A. Churchill. 1891. 12mo. Pp. 188.

THIS little volume, neatly bound in cloth, is a new departure in medical periodicals reporting Branch Proceedings of the British Medical Association. This Leeward Islands' Branch was founded on the 22nd Jan., 1891, at a meeting held in the Chamber of the Legislative Council of Antigua, the Governor, the bishop, and other *gros bonnets* being present. Seven islands contribute twenty-eight members, four of whom hold Irish qualifications.

Eleven papers are printed here, with the discussions which followed the reading. Mr. Edwards, of Antigua, reports a singular case of strychnin poisoning. A European suffering from *delirium tremens*, unable to obtain any more congenial liquor, swallowed the contents of a 1 lb. bottle of Fellows' Syrup, estimated to contain the equivalent of two grains of pure strychnin. The patient recovered after taking 130 grains of chloral. On a former occasion this interesting person had swallowed, in three hours, 180 grains of chloral and 180 grains of potassium bromide, and only "very nearly died of syncope." The editor, Dr. Nicholls, contributes a paper on the treatment of Dysentery, in which he confirms the view of practitioners in the East Indies, that ipecacuanha is "as much a specific for dysentery as quinine is for malarial fevers." We wish the infant Branch a long and fruitful life.

Syphilis in Ancient and Pre-historic Times. By DR. F. BURET, Paris, France. Translated from the French, with Notes, by A. H. OHMANN-DUMESNIL, M.D.; Professor of Dermatology and Syphilology in the St. Louis College of Physicians and Surgeons; Consulting Dermatologist to the St. Louis City Hospital; Physician for Cutaneous Diseases to the Alexian Brothers' Hospital; Dermatologist to St. Margaret's Hospital, &c, &c. Philadelphia and London: F. A. Davis. 1891. 12mo. Pp. 226.

THIS volume is the twelfth of the "Physicians' and Students' Ready Reference Series," published in Philadelphia. It is a translation of the first of Dr. Buret's three volumes on "Syphilis To-Day and among the Ancients." The author, in his preface, divides mankind into two classes—those who have syphilis, and those who may have it some day—to both of which the subject cannot fail to be interesting, albeit unsavoury. We demur to the classification, while we admit the interest.

The question of the origin of this scourge, however slight may be its practical importance, will always be interesting; and this latest attempt to demonstrate the ante-Columbian existence of the disease will, even if it do not convince, be read with interest by those of our profession who can wade through a considerable depth of dirt. Dirt there is, in abundance; and we cannot but express our strong disapproval of the author's avowed intention of writing as well for the public as for the profession.

The translator, whose work is done fairly well, states Dr. Buret's thesis in his preface. "Syphilis is very ancient, and its appearance in Europe did not date from the siege of Naples, but was most probably anterior to it, existing in such a form that but little attention was paid to it, and not until it constituted a large and fatal epidemic did physicians study it." In the third chapter the author himself states his object to be the proofs of the existence of syphilis from the creation of the world to the middle ages. The mottoes of the chapter are quotations from Philippe Albert's *Mémoires sur les Maladies Vénériennes* (Bordeaux, 1836)—"Faire l'histoire de la syphilis, c'est pour ainsi dire tracer celle d'humanité;" and from de la Mettrie's *Saint Cosme Vengé* (Strasburg, 1744)—"Je croirai avec Guy Patin que non seulement Job, David, Solomon, et Adam avaient la Vérole, mais qu'elle étoit dans le cahos avant la création." "The legend of the American origin of syphilis," he says, "still in great favour with the public, is actually no longer defended, except by a very small number of authors. A few find another origin for it—Africa; others concede that it may have shown itself in the middle ages; but the majority attest its birth, for Europe, to Naples, during the siege of that city by Charles VIII., in the year 1494. The truth is that syphilis is and was everywhere, but not as intense in all countries and at all times, and, above all, but little known, not to say unrecognised."

Dr. Buret proceeds to prove his thesis inductively. The late Professor Parrot appears to have been the first to maintain that venereal disease existed in the Stone Age. At Solutré (Saone-et-Loire) a female skeleton was discovered in 1872, with evidence which satisfied Parrot, Broca, and others, of contemporaneity with the Stone Age. The woman to whom the skeleton had belonged had suffered from exostoses "manifestly syphilitic" on both tibiæ. In a course of lectures on Prehistoric Syphilis, delivered by Professor Parrot in 1877, other examples of syphilitic bone-lesions in prehistoric remains were brought forward; some from Peru and other parts of America; and teeth exhibiting the characteristics of hereditary syphilis, obtained from quaternary deposits, were produced. Besides Broca, Allier, Rollet, and Virchow are mentioned as supporting Professor Parrot's conclusions.

Passing from quaternary man to early but historical Chinese, we are told that in the year 2637 B.C. the Emperor Hoang-ty had a compilation made of all the therapeutical traditions of his day. In this work the duality of the chancre, and the distinctions between syphilis and gonorrhœa are recognised. Secondaries are thus described:—"It sometimes happens that, several months after the cure of a venereal trouble, the patient suddenly experiences *headache* with *fever*, *pains in the bones*, and vertigo; shortly after there appear on the forehead small spots of a coppery red (*tan-hong*), which increase little by little. The face swells, and principally the nose; speech is difficult; there is pain and itching in the throat. . . . These spots are changed into violaceous pimples of the size of a pea, allowing a thick liquid of a fetid odor to escape, the body is soon covered with spots and pimples of a like nature; mucosities run from the nose; the breath is insupportable. The pimples, once excoriated, increase in size. . . . Sometimes the pains are only felt *at night.*" From this passage and others which we have not space to transcribe, it is inferred that syphilis was a current disease among the Chinese in the time of the "great-grand-nephews of Noah," and "its nature better known than among the Europeans at the beginning of the nineteenth century."

We pass next to Egypt and the Ebers papyrus, said to date from the time of Rameses II., the Pharaoh of "The Oppression;" but it is admitted that, neither from the text, nor from the appended "Egyptian-Coptic-Latin" glossary, can we conclude with certainty that the ancient Egyptians suffered from syphilis. Having had, however, the Hebrews among them for a long time it is impossible to believe that the Egyptians escaped infection. We shall see presently that Sarah communicated syphilis to the Pharaoh of her day! From cuneiform inscriptions preserved in the British Museum Dr. Buret obtains evidence that seven centuries before our era the Assyrians and Babylonians knew syphilis only too well.

Chapter VIII., before the composition of which Dr. Buret "first studied the Bible carefully," treats of syphilis among the Hebrews in Biblical times. We can only briefly indicate some of the discoveries which have resulted from his research. Solomon, in the fifth chapter of Proverbs, warns those who visited the prostitutes of that day that the effects might be "painful remembrances, capable of lasting for years, and of gravely compromising the general health;" and the son of Sirach in Ecclesiasticus (xix. 3) describes tertiaries. Baal Peor was the Syrian Priapus, whose worship by the Hebrews produced a frightful epidemic of syphilis. Moses adopted heroic treatment; but the slaughter of 24,000 infected men failed to extirpate the disease, and seventeen years later Joshua (v. xvii.) tells the people that they still retain marks of their transgression.

Josephus states that the scourge of Baal Peor was highly contagious. "It was not," says Hamonic, "leprosy, or gonorrhœa, or balano-posthitis, or genital herpes, or even soft chancre." It can only have been syphilis.

Long before this time, however, about 1920 B.C., Abraham had gone down to Egypt, and the reigning monarch of the day had taken Sarah into his zenana, where she gave him syphilis, "which he transmitted to his other wives, or to those of his officers, who gave it to others," until the whole court was infected. Pharaoh restored the dangerous lady to her husband and sent him away. A similar transaction took place subsequently at the court of Abimelech, and in this case sterility resulted from the syphilitic infection. Sarah herself was long sterile from the same cause, but the disease "disappeared with age," and she became pregnant.

Passing over a thousand years, Dr. Buret comes to David, and finds symptoms of syphilis (contracted from Bathsheba) in the pathological Psalms attributed to him. There is too much reason to fear that the unfortunate but patient Job suffered from the same. The chapter closes with a curious extract from a letter of Guy Patin's (*Nouveau Recueil de Lettres Choisies*—Rotterdam 1725), dated Paris, 18th Sept., 1665. "Pour répondre à ce que vous me demandez, je vous dirai que Bolduc, Capucin, a écrit, aussi bien que Pineda. Jesuite Espagnol, que Job avait la vérole. Je croirois volontiers que David et Solomon l'avoient aussi. . . . M. Gaffendy m'a dit que la lèpre, dans la Bible, étoit la vérole *Luis venereæ causa est scortatio turpis, vaga, promiscua, atque talis scortatio est ab omni ævo.* Ce serpent, dans la Genèse, disoit un libertin, étoit quelque jeune Dameret qui donna la vérole à Ève, et voilà le péché originel de nos moines, ce nous disoit M. de Malherbe. Au moins est ce chose certaine que la grosse vérole ètoit bien fort connue dans l'Europe devant que Charles VIII. allât à la conquête du Royaume de Naples."

We must pass over the chapter on *upadansa* (the Sanscrit word, it is maintained, for syphilis); in which it is argued that the disease was known to the Hindoos a thousand years before our era. Subsequent chapters are devoted to the Greeks and Romans. In the former Hippocrates' failure to testify presents a difficulty. An opponent is represented (by the translator) as saying, "If syphilis had been known to the ancients, it would not have escaped an observer like he." The objection is not satisfactorily met.

The book concludes with a chapter on nineteenth-century treatment of syphilis. With all its grotesqueries and indecencies and—as some may think—profanities, this curious work will be read with profit as well as amusement; and the question discussed, and by no means settled, is historically interesting.

Burdett's Hospital Annual and Year-Book of Philanthropy, 1891–1892; *containing a Review of the Position and Requirements of the Voluntary Charities, and an exhaustive Record of Hospital Work for the Year. It will also be found to be the most useful and reliable Guide to British and Colonial Hospitals, Dispensaries, Nursing, and Convalescent Institutions, and Asylums.* Edited by HENRY C. BURDETT, Author of "Hospitals and Asylums of the World," &c., &c., &c. London: The Hospital, Ltd. 12mo. Pp. 588.

WE can hardly say more in favour of this useful Annual than it says for itself on its elaborate title-page. Mr. Burdett is well known as an authority on the subjects with which this book is concerned, and the list of his works bearing on such subjects is long.

This Annual should be within reach of everyone interested in hospital management and sanitary statistics. We have observed only one trivial error—the retention of Mr. Colles' name as Regius Professor of Surgery in the University of Dublin Medical School. It is, we think, to be regretted that a large proportion of Irish hospitals, &c., have declined to aid the editor by contributing information. Out of the mass of subjects included in this volume we shall briefly notice two, which are connected with a question on which there is now in Dublin considerable difference of opinion. Those who object to the establishment of a new hospital in Dublin assert that our city is already over-hospitaled, and unable to maintain in full efficiency the hospitals she already has. Page cxxvii. gives a table showing, for the thirty-four largest towns in the United Kingdom, "the proportion of in-patients to population, the total number of hospital beds available, and the number of hospital beds per thousand of population, together with the number and class of medical institutions." Dublin heads the list; her in-patients are 45·9 per 1,000 of population, Edinburgh coming next with 38·4. Dublin has accommodation in her hospitals for 6·39 per 1,000 of population, Edinburgh again coming nearest with 3·80, and the ratio for London being 1·91, and for Glasgow 3·44.

Dublin, with a population of 353,082, tries to maintain 8 general, 16 special hospitals, and 5 dispensaries; Glasgow, with 567,143, is content with 3 general hospitals, 12 special, and 3 dispensaries. If we turn to page xciv. we find that the average annual cost per bed in the Brompton Consumption Hospital is £87 14s. 6d.; in the Royal Hospital for Diseases of the Chest, £140 9s. 10d.! There is probably a leak somewhere in the latter institution, but if we take the average annual cost of a phthisical patient in Dublin at £80, the proposed Hospital for Consumption will require £8,000 a year to keep it up.

Diseases of the Eye. A Hand-Book of Ophthlamic Practice. By G. E. DE SCHWEINITZ, M.D.; Professor of Diseases of the Eye, Philadelphia Polyclinic; Ophthalmic Surgeon to Children's Hospital and to the Philadelphia Hospital; Ophthalmologist to the Orthopædic Hospital and Infirmary for Nervous Diseases; Lecturer on Medical Ophthalmoscopy, University of Pennsylvania, &c. Philadélphia: W. B. Saunders. 1892. Royal 8vo. Pp. 641.

THIS volume, which is written in clear and simple language, is chiefly characterised by completeness, judicious classification, and systematic arrangement of material, and is a thoroughly reliable text-book throughout. The work is divided into twenty-two chapters, the last being devoted to operations.

Dr. Wallace is responsible for those on optical principles, refraction, normal and abnormal, and that portion of Chap. III. relating to the ophthalmoscope and its theory, and also a part of Chap. XIX., explaining the mechanism of diplopia, the rotation of the eyeball, and the causes of strabismns. The section on retinoscopy is contributed by Dr. E. Jackson.

The text is illustrated by 200 wood-cuts, and seven chromolithographs; amongst them we recognise many old friends, including two of Gowers' admirable sepia drawings. The illustration of albuminuric retinitis from Wecker and Masselon is rather too sketchy. Descriptions and classifications have also been selected by the author from standard text-books and monographs, and their source is always acknowledged. The work is well up to date, and unlike many books of its kind, German literature is not supposed to be the only thing worth referring to, many English names occurring through the text. As examples of recent observations may be mentioned those of Priestley Smith on glaucoma; Knapp's method of treating granular ophthalmia by expression with a roller forceps; the use of fluorescin in the diagnosis and treatment of corneal ulcers, &c.

The standard of excellence is so equal all through that it would be difficult to point to any chapter as being superior to the rest. The practical directions for everting the lids and estimating the tension of the eye are very good, and can be recommended to students who generally experience some difficulty in carrying out these apparently trifling, but really important operations. In the chapter on astigmatism and refraction, the examples of combinations of spherical and cylindrical lenses are especially good, and the same observation applies to the remarks on spectacle frames and their adjustment, a matter which rarely receives the attention which it deserves.

Having carefully read the book, we can confidently recommend it as a reliable work, whether viewed from a scientific or practical point of view.

Fourteenth Annual Report of the Presbyterian Eye, Ear, and Throat Charity Hospital, Baltimore.

THE number of patients treated in 1891 was 10,003, of which 7,364 were eye patients. In 132 cases of cataract extraction (88 without iridectomy), no suppuration occurred. The instruments are always plunged in boiling water before use. The anterior capsule is removed with forceps. Chisholm approves of optico-ciliary neurotomy as a substitute for enucleation. Thirteen cases of pediculi on the lashes were seen, due probably to influx of Polish Jews. Ninety squint operations were performed.

Aids to Practical Hygiene. By J. CARTER BATTERSBY. Calcutta: Thacker, Spink & Co. 1891. Pp. 165.

THIS book labours from the serious disadvantage of having been written in England and published in India, so that orders of the Local Government Board and English legislation are freely quoted, and local requirements, which in India are so peculiar and so important, are omitted. Judged from an English standpoint, the book is a good epitome of modern ideas on hygiene, and will be found especially useful by army medical officers or others who have to prevent disease in different climates.

PART III.

SPECIAL REPORTS.

REPORT ON PUBLIC HEALTH.

By Sir Charles A. Cameron, Ex-President, Diplomate (*Honoris Causâ*) in Public Health, and Professor of Chemistry and Hygiene, R.C.S.I.; President of the British Institute of Public Health; Examiner in Sanitary Science, Royal University of Ireland; Member of Army Sanitary Committee; D.P.H. Camb.; Fellow of the College of State Medicine; Medical Officer of Health for Dublin, &c., &c.

(*Continued from page 75*).

The botanical form and individuality of pathogenic micro-organisms have less interest, from a medical point of view, than their origin and pathological effects. The elaborate researches of Ray Lankester, Giard, Grawitz, Fokker, Naegeli, and many others, show that they modify their form according to the media in which they live. Why then should they not change their habits. Fessinger's experiments on rabbits seem to that bacteriologist some evidence as to the possibility of converting ordinary moulds into the virus of typhoid fever. So that what is now termed typhoid fever may yet be discovered to include several allied diseases, each originating from a distinct pathogenic organism. In 1882 I published an account of some cases of apparently ordinary typhoid fever, but which I satisfied myself originated in the use of milk contaminated with cow manure. Commenting on my papers on an epidemic of typhoid fever caused by infected milk and on mild and abortive typhoid fever, Professor Christian Bäumler, of Freiburg, says[a]—"It is not impossible that what we now cannot but diagnose as 'enteric fever' may yet include several distinct diseases—a view which has also been pointed out by Dr. Grimshaw and Dr. Cameron."

It is to the bacteriologist that we must look for the proofs that several forms of microbes are concerned in the production of the typhoid diseases. At present they are not agreed as to the actual

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[a] Dublin Journal of Medical Science. November, 1880.

form of the typhoid microbes. Letzerich has described them as consisting of micrococci, either isolated in colonies or in chains, very dissimilar to those of diphtheria, and infectious pneumonia, but which by cultivation reach a size twice or thrice greater than the micrococci of the last mentioned disease. On the other hand, Klebs describes the *Bacillus typhosus* as large-sized filaments of 50 micromillimetres in length and 0·2 micromillemetres in breadth, without segments or ramifications. As typhoid fever presents considerable diversity, not only in individual cases but in its epidemics, it is only reasonable to suppose a similar variety in the microbes which produce it. This may account for the somewhat conflicting accounts which bacteriologists have given in reference to the micro-organisms found associated with the disease.

The means which we must use in order to eliminate typhoid fever or lessen its ravages are numerous, and on the whole costly, and all directly or indirectly relate to the ground. A supply of pure water is absolutely necessary. The disease is propagated by means of water, but that which we use is gathered from the ground, and consequently from the latter it derives its pathogenic organisms.

The *role* which water plays in the distribution of the disease, though considerable, does not seem to me to be quite so great as is generally believed. In Dublin, which has an unenviable pre-eminence as the abode of typhoid fever, water is rarely the vehicle of this malady.

I do not go so far as Peter does in his attack[a] upon the theory of the water carriage of typhoid fever, nor agree with him that one of the two prime factors of the disease is an "epidemic constitution" of the atmosphere; but I agree with him that one prime factor is the physical and mental condition of the person exposed to typhoid contagion. I must, however, deprecate the common practice of referring every case of the disease to polluted water, defective sanitary accommodation, or leaking sewers. The fact is undoubted that an improved water supply in Dublin has not been followed by a diminution of typhoid fever.

The expeditious and efficient removal of the excreta and other objectionble matter from our dwellings is certainly a point of prime importance. I have waged war against the privies and ashpits of Dublin for the last ten years, and have now got rid of by far the greater number of them. It has been often alleged in Dublin that the substitution of W.C.s for privies has tended to promote typhoid fever. I find, however, that in towns where the W.C. system has come into use there has been—notably in Glasgow and Edinburgh—an improvement in the state of public health.

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[a] Gazette des Hôpitaux. October 14th and 21st, 1890.

London is a city in which the water carriage of excreta is general, but it is fairly free from typhoid fever. St. Helens, Preston, Salford, and other towns where W.C.s are few have excessive typhoid fever death-rates. I attribute in part the prevalence of typhoid fever in Dublin to the system of storing excreta in pits, generally having a mere clay bottom. This practice, continued for centuries, has ultimately caused the soils to become impregnated with filth and its organisms. The development and retention of those organisms are favoured by the circumstances that subsoil drainage of a large part of the city is very defective. As I attribute partly to this condition of the soil the undue amount of typhoid fever to which I have so often referred, I look to its thorough drainage and its freedom from pollution as the two important means of lessening the amount of typhoid poison in it. As the microbes can escape only when the outer layer of soil is dry, it is well to prevent dust rising from the roadways, by having the latter well watered in hot and dry weather. A most important preventive measure is to keep the soil from pollution by fæcal matter, or any kind of organic matter upon which microbes could develop. We should be as careful not to pollute our ground as our air. I am convinced that typhoid fever is often caused by underground air entering our dwellings. This may be to a great extent prevented by having even the thinnest layer of asphalte or allied material covering the whole of the site upon which the house rests. No air or moisture can pass through such a layer.

As microbes are most abundant in the upper layers of soil, the water from superficial wells should not be drunk. The fact that typhoid fever is the one zymotic almost equally fatal in town and country may be due to the use of water from very shallow wells by the rural population. The lower the well the more likely is its water to be free from microbes. I found in a very deep well that two kinds of water were present; near the bottom it was hard and comparatively free from bacterial life, near the top it was soft, loaded with organic matter, and teeming with micro-organisms.[a]

In conclusion, I must acknowledge that I have freely indulged in speculations and advanced hypotheses, but with little in the way of facts to support them. The two solid facts upon which I mainly rely to give any interest to my remarks are—first, that in Dublin there is a relation between the nature of the soil and the presence of typhoid fever; and, secondly, that the unusually high rate of sickness caused by the disease is totally uninfluenced by the water used by the people.

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[a] See Parke's Hygiene. Eighth Edition. Page 50.

SOME PECULIAR SPECIMENS OF WATER.

It is hardly necessary to say that the quality of the water we drink is a point of prime importance. An excess of organic matter in it is likely to be injurious to our health, even if the organic matter does not contain the germs of such infective diseases as typhoid fever, cholera, &c. We like to have very little organic matter—none if possible—in water, because the larger the quantity the greater the probability that pathogenic microbes may be present. As a rule, potable water, before we use it, has passed through the soil. The latter contains the remains of plants, more or less decomposed, and in part soluble in water. The drainage from soils, which constitutes river, spring, and well waters, therefore, always contains some of the soluble matter, and also, in mechanical suspension, some insoluble organic matter. In the Vartry water, which supplies Dublin, there are from 2 to 2½ grains of organic matter in *perfect solution*. In this water, before filtration, there is a small quantity of insoluble matter, which causes the water to be very slightly turbid. Two or three grains of soluble vegetable matter dissolved in water in no wise affects its quality for potable purposes; therefore nothing is to be gained by the removal of this soluble matter, except a decrease in the slightly yellow colour of the water. Some estimates which I have made as to the quantity of suspended matter in the Vartry water, before filtration, shows that it is about one-fourth grain per gallon; but under seasonal influences this proportion increases or diminishes. Small as this quantity is, its removal by filtration through gravel and sand causes a great improvement in the appearance of the water. Now, it is a matter of great importance to remember that the organisms which produce disease are *insoluble*. As a rule, therefore, the brighter and clearer water is, and the less sediment which it deposits, the less likely it is to include pathogenic microbes. Owing to the minuteness of some micro-organisms they pass through filters of sand and even of paper, and their presence does not cause the water to appear turbid. One, therefore, must not be too sure that bright sparkling water is necessarily free from dangerous organisms; but, undoubtedly, it is very much more likely to be devoid of microbes than if it were turbid. Those who are desirous of effectually removing micro-organisms can do so by means of the "Pasteur steriliser." This apparatus, unlike charcoal, spongy iron, &c., filters, does not remove soluble organic matter, or lessen the colour, but it effectually retains all the insoluble particles, including the most minute organisms. Its high price, £10, restricts its use to the rich.

With respect to the influence which the nature and quantity of the mineral matters dissolved in water exercise on health, there is a conflict of scientific opinion. Soft waters, like the Vartry, have been condemned because they contain no lime. Our bones are largely made up of phosphate of lime, and it is contended that calcareous waters contribute the lime. Having made a careful study of this point, I find that there is not the slightest evidence to prove that the lime in the water we drink contributes to the formation of bone. The lime in it is associated with carbonic acid and sulphuric acid, or its metallic basis is a chloride—to use stricter chemical terms, waters contain calcium carbonate, sulphate and chloride, but our bones contain calcium phosphate, and—but to a much less extent—calcium carbonate. Our food contains lime united with phosphoric acid, and hence, if the water furnished the lime we should have to get the phosphoric acid from our food. Loch Katrine, which supplies Glasgow, has no lime; yet the health of the people of that great city has been much improved since the introduction of Loch Katrine water. The Highlanders of Scotland are remarkable for their health and longevity, and yet their water supplies are almost exclusively free from lime.

If, according to my belief, soft, or moderately soft, waters are wholesome, I think that very hard ones are undesirable. The presence of considerable quantities of earthy salts, more especially of the chlorides and sulphates, is apt to irritate the digestive tract, and to produce alternation of diarrhœa and constipation.

Having a long-continued and extensive experience as a water analyst, I meet from time to time with peculiar and very bad specimens taken from wells situated in various parts of Ireland. It may prove of some interest to publish the analyses of a few of them. I shall first describe what a good water is like. It should be bright, clear, free from suspended particles, and, when warmed, without any unpleasant odour. When looked at through a glass tube two feet long, the finest water has a faint blue colour. Some very good specimens, taken from moor or mountain, have, however, a slightly yellowish hue. About a quart kept for twenty-four hours in a glass vessel desposits a sediment, almost inappreciable in good water, but more or less abundant in bad ones. If any one familiar with the microscope examines the sediment from a bad water he will find such objects as hairs, particles of skin, starch, shreds of cotton, wool, silk, clay, shapeless inorganic matters, vegetable matter more or less altered, and various kinds of low forms of animal and vegetable life, and their seeds or spores, &c.

As to the mineral matters present, they consist most abundantly of salts of lime and magnesia, and of soda, potash, and iron. Near the sea common salt is often present in large quantity; but in soft waters, remote from the sea, its presence, except in minute quantity, is regarded with suspicion, salt being a large constituent of sewage.

The really serious organic impurity is albuminoid matter, because organisms are largely made up of albuminoid matter. It contains about 15 per cent. of the element nitrogen, and during its decay the nitrogen becomes converted into ammonia, and in some cases into nitric acid. In sewage we always find much ammonia, and consequently water containing much ammonia is regarded with great suspicion. As albuminoid matter forms by its decay free ammonia, the analyst by chemical means breaks up or decomposes the albuminoid matter in the water, and converts its nitrogen into ammonia. He then determines its amount. One gallon of water weighs 70,000 grains. If it is of very good quality, it will contain from 0·001 to 6·005 grain of ready-formed ammonia, and by chemical treatment will yield from 0·0005 to 0·005 of "albuminoid" or "organic" ammonia. In the Vartry water, the proportions are from 0·005 to 0·006 of albuminoid, and from 0·0005 to 0·001 of free ammonia. When albuminoid ammonia goes into the second decimal place—*i.e.*, 0·01 grain, the water is not considered to be very good, though *yellowish peaty* water, with one 0·015 grain, may be often safely used. A trace of ammonia is not injurious to health, but as it is derived from organic matter or sewage, its presence in the second decimal place of a grain per gallon is a bad point in the composition of a water.

Nitric acid and nitrous acid in soils are formed from organic matter, or derived from oxidation of ammonia. The presence of nitrates in large quantities is looked upon with suspicion, as sewage saturated soils are usually highly charged with nitrates. Water very impure is purified by filtration through the soil, its albuminoid matter being oxidised into nitric acid compounds. Professor Frankland considers the amount of nitric acid as a measure of "previous sewage" contamination of the water. Therefore, nitrates, though not themselves injurious when present in moderate quantities, are a bad point in the composition of a water. One containing them is more likely to become bad than a water free from nitrates, for I have shown that the composition of wells is by no means constant.

Having given, though in a very sketchy way only, a general view of the nature of a good water, I shall now record the composition of a few specimens of very bad water which have come under my observation.

Pump Water, from Kells, analysed for the Town Commissioners.

	Grains
Total solids per gallon - - -	136·500
Including—	
Albuminoid ammonia - - -	0·010
Saline ammonia - - -	0·002
Nitrogen in nitrites and nitrates - -	3·080
Equal to nitric acid - - -	13·860
Chlorine - - - -	23·245

It contained very little saline ammonia, and a moderate amount of albuminoid matter, but it included nearly 14 grains of nitric acid, and the enormous quantity of solid matters condemned it for potable purposes. Another pump water, examined for Kells Town Commissioners on the same occasion, contained 168 grains of solids, 22·05 grains of nitric acid, and 28·65 grains of chlorine per gallon; but it had very little ammonia.

The water from the pump at Castlebar Courthouse contained 0·025 grain of albuminoid ammonia, and only 0·001 grain of free ammonia. Sometimes a water contains a large amount of albuminoid matter and almost no free ammonia. On the other hand, the albuminoid ammonia may be moderate or very small, and the free ammonia large in quantity. A water, examined for the Dundalk Board of Guardians, contained per gallon:—Total solids, 56 grains; albuminoid ammonia, 0·008 grain; free ammonia, 0·1 grain; nitric acid, 1·89 grains; and chlorine, 10·45 grains.

Waters containing large amounts of Albuminoid Ammonia and mere traces of Free Ammonia.

One gallon of each contains in grains:—

	No. 1	No. 2	No. 3
Total solids - -	49·000	27·300	14·700
Albuminoid ammonia -	0·030	0·100	0·021
Free ammonia - -	0·001	0·002	0·001
Nitric acid - -	4·373	0·063	0·031
Chlorine - -	7·207	3·291	1·192

No. 1—Pump at Arklow. No. 2—Pump at Carrigallan, County Leitrim. No. 3—Clogher Lake water, County Leitrim.

Waters containing much more Free Ammonia than Albuminoid Ammonia.

Grains per gallon:—

	No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7
Total solids - -	122·500	21·000	51·100	70·000	85·000	51·100	56·000
Albuminoid ammonia -	0·025	0·001	0·017	0·009	0·006	0·017	0·008
Free ammonia - -	0·150	0·013	0·150	0·095	0·085	0·150	0·100
Nitric acid - -	8·820	traces	0·280	9·450	1·260	1·260	1·890
Chlorine - -	19·880	1·491	1·260	1·890	2·900	6·560	10·450

No. 1—Pump in Mullingar Union. No. 2—Well in Bawnboy Union, County Cavan. No. 3—Pump in Limerick. No. 4—Pump in Clones Union. No. 5—District Lunatic Asylum, Ennis. No. 6—Pump in Limerick. No. 7—Pump in Dundalk Union.

As examples of thoroughly bad water from every point of view I give the following:—

Pump water, Navan Union, Co. Meath. One imperial gallon contains in grains—

Total solid matters - - - -	273·000
Including:—	
Albuminoid ammonia - - - -	0·100
Saline ammonia - - - -	0·035
Nitrogen in nitrites and nitrates - -	9·800
Equal to nitric acid - - - -	24·100
Chlorine - - - - -	41·748
Equal to sodium chloride (common salt) -	68·796

This extraordinary water is obtained from a pump well sunk, 25 feet deep, through blue clay, at the "Commons" village, one mile from Navan. A better supply being now available, it is to be hoped that this well will be closed.

Pump water from Dundalk Union. One gallon contained in grains—

Total solids - - - - -	56·000
Including:—	
Albuminoid ammonia - - - -	0·100
Saline ammonia - - - -	0·420
Nitric acid - - - - -	1·890
Chlorine - - - - -	10·450

A water from Tramore was found to contain, per gallon, 0·02 grain of albuminoid, and 0·1 grain of saline, ammonia.

A specimen from Lyons, Hazelhatch, Co. Kildare, contained total solids, per gallon, 49 grains, including albuminoid ammonia, 0·1 grain, and saline ammonia, 0·8 grain. It had the odour of sulphuretted hydrogen.

Composition of water taken at Mornington, Drogheda. One gallon contains in grains—

Total solid matters - - - -	312·200
Including:—	
Albuminoid ammonia - - - -	0·045
Saline ammonia - - - -	0·690
Nitric acid - - - - -	0·048
Chlorine - - - - -	119·280
Equal to sodium chloride (common salt) -	196·560

This water was slightly brackish.

Pump water, Claremorris Union. One gallon contains in grains—

Total solids - - - - -	56·000
Including:—	
Albuminoid ammonia - - - -	0·150
Ammonia - - - - -	0·090
Nitric acid - - - - -	5·040
Chlorine - - - - -	4·970

Rosculbin Well, Irvinestown Union. One gallon contains in grains—

Solid matters - - - - -	54·600
Including:—	
Albuminoid ammonia - - - -	0·600

Saline ammonia	0·140
Nitric acid	0·620
Chlorine	6·858

As an example of the effects produced on a river by the waste products of a manufactory (paper mills) going into it, I may give the composition of Dunadry river water, Co. Antrim. An imperial gallon contains in grains—

Total solids	149·000
Including :—	
Albuminoid ammonia	0·450
Saline ammonia	0·450
Nitric acid	trace.
Chlorine	13·120

It had the odour of sulphuretted hydrogen.

As an example of water containing much nitric acid and but little ammonia, I may give that from a pump at Irvinestown, Co. Fermanagh. One gallon contained in grains—

Total solids	77·00
Including :—	
Albuminoid ammonia	0·002
Saline ammonia	0·001
Nitric acid	3·528

Examples of Pure Water.

Well water, Moyvalley House, Co. Kildare—

	Grains
Total per gallon	43·4000
Including :—	
Albuminoid ammonia	0·0010
Saline ammonia	0·0001
Nitric acid	traces.
Chlorine	4·170

Pump water, Clonmel Prisons, female side—

	Grains
Total solids per gallon	35·000
Including :—	
Albuminoid ammonia	0·0010
Saline ammonia	0·0001
Nitric acid	2·2050
Chlorine	2·1500

Although this water contained some nitric acid, it was practically free from organic matter.

The following is the general composition of the Dublin pipe water (Vartry water):—

One imperial gallon contains—

Total solid matters	4·220
Including:—	
Albuminoid ammonia	0·005
Saline ammonia	0·001
Nitrogen in nitrites and nitrates	trace
Chlorine	0·995
Oxygen absorbed from potassium permanganate solution:—	
After 15 minutes at 80° F.	0·058
After 2 hours	0·160
Hardness before being boiled	1·5°
Do. after do.	1·3°

Heated to 100° F. no peculiar odour was noticed.

When looked at through a tube two feet long, it appeared slightly yellow. On standing a slight sediment was formed, in which a few unimportant organisms were visible under the microscope. Examined by the biological method the result was satisfactory.

In concluding this article it may interest some of the more scientific readers of the Journal to learn the composition of a water from a lake in central Africa, which I analysed for Surgeon Parke, A.M.S., the distinguished medical officer of the Stanley Expedition. I have not read of any natural water—even that of the Dead Sea—which contains so much saline matter. It is probably water of greater density than any yet described. Colour, faint *pink*, due to organic matter. Specific gravity, 1·274. One hundred parts contain 30·7 per cent. solid matters, having the following percentage composition:—

Sodium sesquicarbonate	6·88
Disodium (common) carbonate	11·84
Sodium chloride (common salt)	38·65
Sodium sulphate	9·75
Potassium chloride	32·88
	100·00

Calculated as crystallised salts, the inorganic matter would make about 44 per cent. of the weight of the water, and would be composed as follows:—

Sodium sesquicarbonate	5·83
Disodium carbonate	23·96
Sodium chloride	28·98
Sodium sulphate	16·58
Potassium chloride	24·65
	100·00

Sodium sesquicarbonate is a salt rarely met with.

DIPHTHERIA IN BELGIUM.

One hundred and forty-one pages of the *Mémoires couronnés et autres Mémoires* of the Royal Academy of Medicine of Belgium for 1892, are devoted to a monograph on diphtheria.[a] The author inclines to the opinion that it was known to the ancients, and that it was prevalent in Egypt and Syria, where it chiefly attacked infants. The first accurate account of the malady refers to an epidemic which appeared in Spain in 1583, and which for thirty years ravaged the Iberian peninsula. It disappeared from that country in 1618, but appeared in Naples immediately after. After a severe epidemic the disease vanished from Naples, and shortly after it spread through portions of France. During the following two centuries diphtheria seems to have been dormant, but in 1853 it re-appeared, and assuming a pandemic form, spread over the greater part of the world. Climate seems to have had no influence upon the disease, as it ravaged the coldest parts of the Scandinavian peninsula as well as the warmest parts of India and South America.

An exact knowledge of the cause of diphtheria, and of its mode of propagation, is, says Dr. Gallez, necessary, in order that the disease may be combated and eradicated. This is indeed equally true of every infective malady. The author defines diphtheria to be a specific bacillary affection, contagious, primarily local; though superficially powerful it does not affect the skin, remaining in the system through an intermediary consisting of a soluble poison which slowly decays. The special anatomical lesion consists of a superficial fibrinous exudation (which is seldom deep) from the superior portion of the respiratory passages.

In 1883 Klebs discovered in the false membranes of diphtheria a bacillus, which Löffler succeeded in isolating and cultivating. It is not quite so long as the bacillus of tuberculosis, but it is thicker, and it is easier to stain its extremities than its central part. Sometimes the extremities of the microbe are swollen into masses, which, according to Zarnico, are symptoms of degeneracy.

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[a] La Diphtheria en Belgique; les causes et la prophylaxie. Par le Dr. Leon Gallez. Bruxelles. 1892.

The recent researches of Klebs, and of many other eminent bacteriologists, seem to clearly establish the bacillary nature of diphtheria, and have revealed much of the life-history of the organism itself. Löffler found the same kind of bacillus present in the mouths of 21 patients affected with diphtheria, whilst on the other hand he never met with it in cases of simple angina. Babes, of Bucharest, found that in 42 cases of the disease the microbe was invariably present. D'Espiné, of Geneva, detected it in all the cases (14) in which he sought for it; and in 50 cases investigated by Kolisko and Paltauf, of Vienna, the characteristic bacillus was present. In short, competent observers appear to invariably find this bacillus in connection with diphtheria.

With respect to the culture of the diphtheria bacillus, it is stated that an organism which strongly resembles it may be differentiated from the real microbe by its action upon the nutrient material. The true microbe produces an acid reaction, whilst the pseudo diphtheria bacillus develops an alkaline reaction. Rabbits, Guinea pigs, and pigeons inoculated with the diphtheritic microbe have developed false membranes in their mouths and throats.

There may be present in diphtheria other virulent microbes as well as that which is characteristic of the disease, and these organisms—various species of *Streptococcus*—probably occasion some of the grave complications of the disease. Pneumonia, otitis, and ganglionic abscesses are, no doubt, the work of distinct kinds of micro-organisms.

Dr. Gallez is satisfied that the immediate cause of diphtheria is not the microbe, but a soluble toxic substance which it secretes. The "cultures" with the bacillus do not lose their infective power when filtered, which proves that the actual poison is not an organism, as the latter could not pass through a proper filter. According to Œrtel, the action of the diphtheritic poison is unique. It operates equally in setting up general or local infection; but the diversity of the phenomena which it develops depends entirely upon the quantity and intensity of the virus, and the situation and nature of the tissues attacked. The visible effect of the poison consists in the modification of the cells, and more especially of the leucocytes. The processes of mortification which are always set up; the decomposition of the contents of the cell, and of the nucleus; the conversion of the protoplasm, of the substance of the nucleus, into a diffluent material, homogeneous, at first finely granular, then liquefying, and finally forming reticulated masses. These phenomena are not specific, they are not absolutely peculiar to diphtheria, nor can it be affirmed that the changes which lead to the death of the cell produce those morphological alterations which are apparent only in diphtheria.

Besides this destructive action on the cell, the diphtheritic poison possesses a second power—namely, the faculty to elaborate hyaline, not merely by killing the cells, but by disorganising the albumen of the connective tissue and muscular substance. Hyaline, which is always found in diphtheria, is also present in other maladies—tuberculosis, for example.

Dr. Gallez discusses the subject of the origin of diphtheria epidemics. He rejects the hypothesis of its spontaneity, and believes that every case has an antecedent one. He gives proof that the disease is directly communicated from the sick to the healthy, and he cites cases where healthy persons were the carriers of the virus of the disease in their clothes, &c.

As to the disease in the lower animals, it seems that it may affect bovine animals, cats, fowls, and pigeons. It appears to prevail more amongst fowls than other animals; but according to Saint-Yves Ménard, the microbe which produces diphtheria in birds is quite different from that which causes the human form of the disease. This bacteriologist states that the diphtheria of birds, though highly contagious, is incommunicable to man. The contrary view has been advocated by Professor Tessier, of Lyons, and others, and especially by Nicati, of Marseilles, who has published a large number of cases illustrative of the transmission of diphtheria from fowls to children. Menzies attributes numerous cases which he observed in Italy to emanations from the excreta of birds. Several cases in which the disease seems to have been transmitted to man from turkeys having been cited, Dr. Gallez says that in this animal a disease may occur resembling in its symptoms, evolution, and gravity the diphtheria of man; and he considers that the malady in the turkey may be the starting-point of an epidemic amongst men, the virus of the disease being transmissible through the air.

The importation of diphtheritic virus through the medium of clothing and bedding does not appear to be a rare occurrence.

According to Stecher, it may be derived from children's perambulators, and more especially from the playthings which they introduce into their mouths, from household goods, wood, and, in short, from all articles upon which the virus can find a resting-place.

Professor Tessier shows that it may be contained in beverages and other ingesta, including milk. As to water being a vehicle for the poison there is no certain evidence, though in some cases there was a suspicion that the attacks were due to polluted water. Tessier is strongly of opinion that diphtheritic poison is propagated through long distances in the atmosphere; dust carries the poison.

With respect to the causes predisposing to diphtheria, Gallez says that the disease attacks all persons, but more particularly children, and is more likely to affect males than females. As to predisposing causes, those who have had affections of the throat and respiratory passages are most liable to contract diphtheria. Wetteren records an epidemic of diphtheria in 1853, which followed an outbreak of scarlet fever, attacking the same people. A scrofulous condition predisposes to the disease, as does also a feeble condition of the constitution. Robust children rarely contract the malady.

Previous attacks of the disease seem to afford less protection against fresh ones than in the case of other infective maladies. A case is recorded of an individual who had three distinct attacks.

It seems to attach itself to particular families in the same way as tuberculosis, but why it does so has not been explained. Social conditions have a great influence upon the disease, as shown by statistics in relation to Brussels, published by Dr. Janssens. In 1,237 deaths from all causes amongst the rich there were 9 ascribed to diphtheria, or at the rate of 0·727 per 1,000 deaths. Amongst the middle classes there were 138 from diphtheria per 7,869 from all causes, or 1·753 per 100 deaths from all causes. Amongst the poor there were 640 deaths from diphtheria in 39,230 from all causes, or in the ratio of 1·628 per 100. These deaths occurred in the decade 1879–1888. Brussels is a hotbed of diphtheria; compared with it Dublin may be regarded as free from this serious malady. Antwerp is also the abode of the disease.

The following figures refer to the seasonal intensity of the disease in Brussels:—

In the first three months of the year the deaths from diphtheria were in the ratio of 2·099 per 100 deaths from all causes; in the next quarter the rate was 1·577; in the third quarter the number was 1·267; and in the last quarter of the year, 2·399. Thus it will be seen that in Brussels diphtheria, like typhoid fever in Dublin and elsewhere, attains to its maximum in the autumn. In Antwerp diphtheria is most prevalent in the winter and spring; in Liége in winter, but less in autumn. In Ghent it stands thus in the order of intensity:—Winter and spring almost equal; autumn and summer, variable. In Bruges it is very much more severe in summer than at other seasons. The mean of three years shows that in summer diphtheria caused 6·078 deaths per 100 deaths from all causes, 13·926 per 100 in the winter, 3·448 in the autumn, and 3·034 in the spring.

In a great epidemic of diphtheria at Alost, in 1858-9, it was observed that the course of the disease was uninfluenced by meteorological conditions. Dr. Gallez, however, comes to the conclusion, from the study of the disease in all parts of Belgium, that it prevails most during seasons of cold and wet. It attains its greatest intensity in winter, diminishing in spring, and in autumn it begins to increase again.

There appears to be no influence upon this disease due to geographical situation. It is met with on the plains as well as on the uplands. Low-lying and damp soils, however, seem to favour the disease; and its epidemics follow the water-courses.

The author, at great length, considers the various conditions, in towns especially, which are the prime factors in spreading the disease. These are—filth, want of sufficient air and light, stagnant waters, ponds and ditches dried up, exposure of excreta on the surface of the ground. With respect to the measures for preventing the disease, or lessening its ravages:—Schools are a great foci of the disease, and the pupils attending them should, at the time of their entrance thereto, and subsequently, have their throats examined. Means should be taken to prevent infected children from coming to the schools. The author considers that food may convey the contagion of the disease, and therefore milk and other articles which may have come in contact with persons affected with diphtheria should not be permitted to be used. Pure water should alone be used. Those affected with the disease should be strictly isolated, and the usual measures for disinfecting clothing, &c., should be adopted. Those who attend upon the sick are recommended to wear cotton filters over their mouth and nose. Considerable space is devoted to the subject of inoculation for diphtheria, but the utility of the operation is not proved.

BORIC ACID IN FOOD.

Mr. Charles Cassal, F.I.C., read a paper on the above subject before the Society of Medical Officers of Health, London, on February 15th, 1892. He points out that boric acid is now largely used as an antiseptic in milk and butter. Boric acid is not a normal constituent of food, but small quantities of it introduced into such perishable articles as milk or cream greatly retards their decomposition. It is a nice question whether or not such additions can be regarded as adulteration. They do not fraudulently increase the weight of the substances, nor, unlike the case of the admixture of alum with bread, or of annatto, or saffron with butter, improve their appearance. If, however, it is an unwholesome substance its addition to food ought to be prohibited. One authority states that it acts like a " mild alkali " upon the alimentary canal, tending to render the fluids alkaline and to produce diuresis, and that it checks fermentation due to organisms.

Some years ago Dr. Forster experimented with boric acid upon dogs, and from the result of his experiments he came to the conclusion that even in smaller quantities than it is usually employed as a food preservative it is injurious to the digestive organs. He found that it materially increased the proportions of solid matters and of nitrogen in the fæces, and also that it augmented the flow of gall.

E. Hotter's experiments with boron compounds on plants gave results showing that they destroyed chlorophyll, and arrested the processes of assimilation.

Mr. Cassal quotes the opinion of Sir Henry Thompson, who thinks that the employment of boric acid might be permitted in the milk trade, provided that the consumers of milk cream were informed that these articles were preserved by boric acid or borax.

Sir Henry Thompson is of opinion that 8 or 10 grains per pint of milk—the quantity usually employed—would not be injurious to an adult consuming that quantity; but that in the case of infants, who use milk largely, such proportion would be injurious. Mr. Cassal concludes his paper by expressing his belief in the noxious quality of boric acid, salicylic acid, and benzoic acid as food preservatives.

In the discussion which followed the reading of this paper, Mr. Wynter Blyth expressed his personal belief in the harmlessness of moderate doses of boric acid. He referred to the experiments of Professor Allan Macfadyen, as showing that bacteria were not necessary agents in digestion in the stomach.

Dr. Ogilvy related his personal experience of the body. He and two friends, whilst yachting, used food preserved with boric acid, and consumed each 4 ozs. within a month without experiencing any ill effects from it. Dr. Bernays said that his fish-monger used boric acid largely in preserving fish, and that he never heard any complaint from the people who ate the preserved fish.

The question whether or not boric acid should be used as a food preservative appears to be a vexed one, and requires further discussion. In any case there is evidence enough to prove that it does not produce very sensible toxic effects.

THE MICROBE OF INFLUENZA.

Dr. Pfeiffer[a] has announced the discovery of a microbe, which he believes to be the cause of influenza. He has found it in the bronchial secretions of patients suffering from this disease, and in autopsies on the pleural surface. He has cultivated it in 1½ per cent. of agar-agar with success. This organism is very small—about half the size of the microbe of septicæmia in the mouse; it is rod-shaped, and commonly appears in chains of three or four. Its best stain is Löffler's methyl blue.

Pfeiffer succeeded only in inoculating rabbits and monkeys with this microbe, which upon other animals appeared to be inoperative.

Canon[b] states that in 20 cases he recognised in the blood of influenza patients the microbe described by Pfeiffer. His process consisted in steeping a drop of air-dried blood in alcohol for five minutes, and then staining it by six hours' immersion in a Czenzynke's solution. This consists of concentrated solution of methyl blue of 0·5 per cent. strength, 40 parts; eosin solution in spirit containing 70 per cent. of alcohol, 20 parts; water, 40 parts = 100. This stain causes the red corpuscles to become a deeper red, whilst it makes the white corpuscles and the microbes blue.

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[a] Verläufige Mittheilungen über der Erreger der Influenza. Deutsche medinische Wochenschrift. 1892. No. 2. S. 3.

[b] Ueber einen Micro-organismus im Blute von Influenza-Kranken. Deutsch. med. Wochensch. 1892. No. 2. S. 3.

The influenza microbe disappears from the blood about six days after the cessation of the fever. They have not been detected in the blood of healthy persons, nor are they pathognomonic of other diseases.

Klein, of London, confirms Pfeiffer's and Canon's observations.

EPIDEMIC PNEUMONIA.

Mr. T. B. Franklin Eminson, Medical Officer of Scotter district of the Gainsborough Union, has published in pamphlet form an account of several epidemics of pneumonia in his district and neighbourhood. There were four outbreaks. The first began on the 6th April, 1890, and ended on June 21st, in the same year. It was investigated by Dr. Parsons, one of the Medical Inspectors of the Local Government Board, and he attributed it to emanations from sewers and contagion combined. The second outbreak took place early in March, 1891, and the third and fourth occurred during the present year.

The village of Scotter has a population of 700, and is situated in a low-lying and sheltered position on the eastern border of the valley of the Trent. It is surrounded by high grounds on the south and east, and is open to the valley at the north and west. The houses are generally composed of thin brick walls, which admit damp, and most of them have no damp courses on the foundation walls, and in other ways are exposed to damp. Nearly 40 per cent. of the houses have no spouts, and in many instances the floors are below the level of the street. In some of the houses the ground damp ascends as high as the bedrooms.

Typhoid fever, formerly prevalent at Scotter, has almost disappeared from it; but, on the other hand, pneumonia has greatly increased. Mr. Eminson attributes the decrease of the former to an improvement in the drainage and water supply of the village. But to a general improvement in drainage there is an exception—a large main drain at the south end of the village has gradually become more and more the receptacle of sewage. It is to the emanations from this sewer that Mr. Eminson attributes the beginning of the fever epidemic. The first case in the epidemic of 1890 occurred in a house connected with this sewer, and the majority of the subsequent cases occurred along its course. A study of these and other cases has convinced Mr. Eminson that the pneumonic poison came into the houses which were connected with this sewer, and he found that many of the house drains were untrapped.

"The work done by the south sewer and its branches for some years past has been as follows:—It receives slops and other liquid refuse from eighty-six houses; drainage from four or five farm-yards, two slaughter-houses, and the school urinal; and solid excreta from one w.c. It also takes the surface rain-water of the higher parts of Scotter, but the spout-conductors do not usually connect with it directly. All the houses along its course, with a very few exceptions, drain into it, as they have no independent drainage. The inmates of the few houses not connected with the sewer follow the old custom of throwing their liquid refuse into the town street or their back yards. At the time of the outbreak, there were six rain-water inlets into the main sewer besides others into the branch sewers; one near the outfall was a naked pipe; four in the main street, old-fashioned, nominally trapped inlets; and one at the beginning of the sewer, a new street gully. The four inlets in the main street with the old-fashioned 'mason's trap' were all situated below the school; they consisted of a brick catch-pit cut off from the sewer by a slab, which, when water was in the pit, acted as a trap. Unfortunately, these pits would not hold water long, as it more or less quickly percolated through the porous bricks into the dry, gravelly soil beneath: consequently these four inlets in the middle of the village were more frequently untrapped than trapped, and even in wet weather sewer air was said to escape freely through the crevices in the decayed woodwork of the frames. More than this, it was the invariable practice to leave the catch-pits dry when they were cleaned out. The result of all this was that these inlets acted as so many ventilators of the sewer, and gave rise to much annoyance to those passing along the pathway and those living near. The inlets in the back yards of the houses were often untrapped, consisting of a naked pipe, with a depression in the ground to receive slops; or there was a catch-pit of mortared or unmortared brick; in other instances the catch-pit was covered in by a D trap fitting into a frame of wood or stone, but these traps were necessarily loose and removable in order that the catch-pit might be emptied of sediment. In a few rare instances gullies were attached to the inlets. Thus it will be seen that this sewer had the work of a sewer, without its safeguards. It was mostly untrapped, wholly unventilated, unflushed except in wet weather, and its joints were open: no one thought anything about it except when complaint was made of the stench, and that was deemed an unavoidable evil. Its natural advantages of fall prevented it being blocked up, but the abominable smell at the outfall when rain fell after a dry time, and the quantity of foul, black sediment then washed out, discolouring the river water for some distance, showed that considerable deposit did habitually take place in the pipes, but that it was cleared out when heavy rains fell; or, rather, this was accomplished in the greater part of the main sewer, though not always in the upper part beyond the school, for as recently as the previous winter all these six-inch pipes became blocked and had to be relaid, and it was then that the new street gully spoken of was laid in place of the pre-existing contrivance. Such was the condition of the south sewer at the time of the outbreak: I have to add that there was only one bath connected with it, and that the inhabitants generally practised no systematic flushing by means of pumps, &c."

The author describes the west sewers, three in number, with distinct outfalls. They are deep, and having open joints, they drain the surface soil. They drain about 20 houses and a few farmsteads, but no W.C.s discharge their contents into them. These sewers have, therefore, less work to do than the south sewer, which drains 86 houses and has but one outlet. The south sewer seems to have been the prime cause of the epidemics of pneumonia, and the author remarks that those who suffered least from this disease were the denizens of the houses unprovided with drains. The lesson derived from this fact is that it is better to have no drains than to have badly constructed or neglected ones. The author, however, disclaims any intention of condemning drains, for he says—"Surface drainage has done much for Scotter—it has banished typhoid fever. Good sewerage will, I trust, banish this disease (pneumonia) as effectually."

Mr. Eminson having studied the circumstances connected with the outbreaks at Scotton and Messingham, came to the conclusion that they were due to the bad state of the sewers and house drains in those districts.

At the request of Dr. Ballard, of the Local Government Board, Mr. Eminson fed white mice on bread impregnated with the sputa of pneumonic patients. The animals were differently affected; those that swallowed the sputa of persons who succumbed to the disease, developed symptoms within a few hours, and died much sooner than mice did that had been fed on bread mixed with the sputa of patients who recovered from the disease. Dr. Klein, of London, discovered in the mice the *Bacillus pneumoniæ*.

Mr. Eminson makes brief reference to the works of previous observers as to the infective nature of pneumonia, quoting the paper by Drs. Grimshaw and J. W. Moore, on "Pythogenic Pneumonia." He states that during Dr. Ballard's inquiries as to the cause of the great outbreak of pneumonia at Middlesborough, that experienced sanitarian came to the conclusion that bacon was an important factor in spreading the disease. It seems that bacon is prepared in that town by steeping salted pork in brine; after getting rid of the excess of salt the meat is hung up in sheds or yards to dry. Dr. Ballard believes that in these places it absorbs disease germs. He gives proofs of this theory, which seem to be very strong and go far to prove the great importance of cooking bacon thoroughly. It was shown that many persons who consumed bacon almost raw became victims to pneumonia.

Mr. Eminson summarises his conclusions as follows:—

"(1) The pneumonia seen at Scotter during the last eighteen months is a 'fever;' that is, one of the specific febrile diseases.

"(2) It is not a new disease, but has increased in prevalence during the last ten years; a well-marked epidemic occurred in the spring of 1886.

"(3) It has been caused by emanations from foul sewers and soils.

"(4) The soil, and especially the sewers of Scotter, have become infected in almost all parts of the village, and have thus become breeding grounds of the disease germ.

"(5) The virulent and fatal epidemic of 1890 originated through the disease germ breeding in the large south sewer.

"(6) The special virulence of that epidemic was due to many assisting factors, chief amongst which probably were these:—

"(*a*) The prolonged dry weather, more particularly in the month of April, spring being the natural season of the disease.

"(*b*) The good fall of the sewer causing a constant up-draught from the outfall to the untrapped inlets, and especially the higher inlets. For the same reason, too, in the absence of efficient rains, the liquid portion of the contents drained away, leaving the sediment to ferment and become surface-dried.

"(*c*) The season appeared to be specially favourable to the growth of low forms of life, such as moulds, mildews, &c.

"(7) During the prevalence of the 1890 epidemic, the disease may, in a few cases, have been caused secondarily, apart from sewer and filth emanations. That it may be thus caused is all but proved by the infection of mice through eating the sputa in their food. The danger from such secondary causes, however, was slight compared with the original sewer danger.

"(8) The children's epidemic was due to the same sewer emanations as the pneumonia of the adults, but its exact relation to that disease remains doubtful. Their symptoms closely resembled those of simple sewer air poisoning; and the evidence tends to show that their mild sickness was not infective.

"(9) The disease was introduced from Scotter, first to Scotton, and then to Messingham. The manner of its introduction is unknown; but it is suggested that it occurred through winds carrying the poison given off from the south sewer to the surface nuisances and sewers of those places.

"(10) The pneumonia which occurred in Scotter and its immediate neighbourhood during the prevalence of the influenza epidemic of 1891, was the same disease as that seen in the previous pneumonia epidemics. This is shown by its special incidence in the district where the pneumonic poison had become endemic, and especially by the marked selective power shown by the pneumonia in attacking houses, where, as a rule, influenza and insanitary conditions co-existed.

"(11) The pneumonia seen in this neighbourhood is a preventable disease."

NEPHROTOMY AFTER NEPHRECTOMY.

At the last Annual Meeting of the Medical Society of the State of New York Dr. Willy Meyer, of New York, stated that he had extirpated six kidneys, and that the six patients were alive and enjoying life. On one of these, an unmarried woman, aged twenty-eight, nephrectomy was performed and followed by recovery. On the thirty-ninth day after the operation, the patient sitting up and passing a normal quantity of urine sudden anuria set it. Mechanical obstruction of pelvis or ureter of remaining kidney being diagnosticated incision was made, and a dense mass of pus and blood discovered within kidney and ureter. This *debris* was washed backward towards the pelvis of the kidney so as to restore the patency of the ureter. A few weeks later the anuria recurred, and after eight weeks a long worm-like shred was passed into the bladder from the ureter. Complete recovery followed.

POISONING BY POTASSIUM CHLORATE.

Prof. Abrams, of San Francisco, reports in the *Occidental Medical Times* a fatal case of poisoning with this drug. The patient, aged three years, swallowed 30 three-grain lozenges. Three hours after 12 or more were vomited. After 6 hours free from symptoms vomiting recurred, with cyanosis and collapse. On the tenth day the child died. For the last six days of life only 5 or 6 oz. of urine were passed, very turbid and containing about 7 per cent. of albumen. Death was due to secondary affection of the kidneys, due to the accumulation of hæmoglobin, set free by the destruction of the red corpuscles by the poison in the tubuli uriniferi. Hence oliguria and uræmia.

PART IV.

MEDICAL MISCELLANY.

Reports, Transactions, and Scientific Intelligence.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

President—George H. Kidd, M.D., F.R.C.S.I.
General Secretary—W. Thomson, F.R.C.S.I.

SECTION OF PATHOLOGY.

President—C. J. Nixon, M.D.
Sectional Secretary—J. B. Story, F.R.C.S.I.

Friday, February 26th, 1892.

The President in the Chair.

Adenoma of the Breast in Childhood.

Mr. R. Glasgow Patteson showed two specimens, with microscopic sections, of this uncommon affection. The first was obtained from a child, aged thirteen, who was under the care of his colleague, Mr. M'Ardle, to whom he was indebted for kindly placing it at his disposal. Twelve months previously she had met with an injury to the left breast, and from this date the tumour had been slowly growing. It was absolutely painless and was freely movable. It lay immediately beneath the breast, which showed signs of commencing development. On removal it measured 28 mm. by 17 mm., its greatest thickness being 9 mm. Microscopically it proved to be a typical fibro-adenoma, the stroma composed of dense fibrous tissue sparsely cellular, arranged in wavy parallel bundles, among which lay numerous glandular acini lined with a columnar or cubical (in parts compound) epithelium. In many of the acini dilation had occurred, and active epithelial proliferation was filling up the widened lumen with papillary ingrowths. The second case was that of a child, aged twelve years and nine months, in whom the growth had only existed for three months. It presented very similar clinical features to the other case, differing only in respect of size—it was as large as a small fig, and somewhat similar in shape—and in its extreme sensibility, so that the rubbing of the clothes even caused pain. There was no trace of mammary development. On removal it presented a peculiar greyish white, in parts semi-translucent appearance when cut, and exuded a clear mucinoid fluid. Microscopically it presented identical features except impressing a less dense intra-acinous stroma, and in showing more cellular infiltration in the neighbourhood of the acini. It measured, when fresh, 35 mm. by 27 mm., and 14 mm. in its thickest part.

Mr. Patteson analysed the recorded cases of adenomatous tumours and found that no instance under the age of fifteen could be discovered. One case, which was doubtful, placed the commencement of the growth in the fourteenth year. He referred to the occurrence of a "glandular tumour" in one of these cases, in which there was no trace of the normal mammary development, and argued that such cases must be due to a similar cause to that of those growths which occurred in extreme old age—as late as eighty-five (Velpeau)—long after all the normal glandular tissue had undergone natural fibrous atrophy. To this common origin Birch-Hirschfeld had given expression in regarding them as the outcome of "embryonic rudiments," and we must either accept this solution of the difficulty or be content to leave the question wrapped in pathological darkness.

Alveolar Sarcoma.

Mr. Conolly Norman exhibited a large tumour which had grown beneath the liver, and had probably had its origin in the lesser omentum. It was attached to the under surface of the liver by inflammatoy adhesions. The whole mass weighed 12 lbs. The anterior wall of the gall bladder could be made out lying between the superior surface of the tumour and the under surface of the liver. The posterior wall of the gall bladder was lost in the tumour. The stomach, duodenum, and pancreas were free, and there was no trace to be found of secondary infiltration anywhere save one very small nodule in the lower margin of the right lobe of the liver.

The case was interesting clinically owing to the fact that during life the affection closely simulated cancer of the liver, thereby resembling a case recorded by Frerichs; and pathologically, from the rarity of primary growths in the lesser omentum, as well as from its structure. Microscopic examination showed the characters of an alveolar sarcoma. The nodule in the liver was of a similar nature. The speaker suggested the endothelial origin of the growth.

Syphilitic Gummata of Liver and Spleen.

Dr. Walter Smith exhibited viscera taken from a man, aged sixty-three years. He was admitted to hospital, suffering from thirst, polyuria, and debility, and had slight œdema of the legs. Nine years ago he contracted a chancre, followed by secondaries, and subsequently by tertiary ulcers in his legs, forehead, and palate. The urine was copious; sp. gr. low. It contained albumen but no sugar, and the sediment contained tube-casts. He died of uræmia one week after admission.

Nothing abnormal could be detected in the heart or lungs. At the *post mortem* examination the kidneys were found to be cirrhosed; the liver was not materially altered in size or form. On its under surface and through its substance were several rounded nodules, cream-yellow in colour, firm on section. In addition to these there were some puckered, keloid-like cicatrices below the surface. The spleen also presented several nodules, sharply defined, tough, yellow, and obscurely laminated on section. Microscopical examination by Dr. Earl showed that the nodules in the liver and spleen were syphilitic gummata. Liver, spleen, and kidneys were, further, all affected with amyloid degeneration. Gummata are rarely found in the spleen—Dr. Wilks exhibited the first specimen to the London Pathological Society in 1860.

Fracture of the Lower End of the Radius.

PROFESSOR E. H. BENNETT directed attention to the systematic classification of these fractures, and discussed the fracture known as Colles' fracture reversed, in which the carpal fragment of the radius is displaced forward. He showed Professor Smith's cast of the injury, and one taken from a recent case by himself. Having examined the views of Gordon and others with regard to this injury, he exhibited eight pathological preparations—one from the Royal College of Surgeons' Museum, and seven from the Museum of Trinity College.

He then discussed the longitudinal fractures of the lower end of the radius, exhibiting a series of these from the same collections, which served to show that the cause of these fractures is antero-posterior compression of the wrist. He described the experimental production of these injuries, and, lastly, he exhibited an united fracture of the radial styloid process.

The Section adjourned.

SECTION OF SURGERY.

President—H. G. Croly, President of the Royal College of Surgeons in Ireland.

Sectional Secretary—R. L. Swan, F.R.C.S.I.

Friday, April 8, 1892.

Mr. Hamilton, F.R.C.S.I., in the Chair.

Specimens Exhibited.

Living specimens were exhibited by the President, Mr. Wheeler, Sir W. Stokes, Mr. C. B. Ball, Mr. Hamilton, and Mr. Swan. Specimens by card by the President, Mr. Doyle, Sir W. Stokes, Mr. Kendal Franks, and Mr. Swan.

Aneurysm or Abscess.

Mr. Barton read his paper entitled "Aneurysm or Abscess," and detailed an interesting case in which the diagnosis was extremely obscure, and alluded to instances in which the most eminent surgeons had mistaken the diagnosis of those cases.

Mr. Kendal Franks corroborated Mr. Barton's account of the pulsating tumour, and of the difficulty of diagnosis. His own opinion was that it was a case of aneurysm, and the only doubt he had in the matter was that from the position of the tumour—namely, the upper portion of the cardiac region—it was difficult to imagine from what part of the aorta it could spring, unless it were an aneurysm of the heart. The distensile pulsation was very remarkable, and the weight of evidence seemed to him to be so strongly in favour of aneurysm, that he was surprised to find his colleague, Mr. Barton, equally certain that he had an abscess to deal with. But the result proved that Mr. Barton was right, and he had no hesitation in confessing that he was wrong.

Mr. M'Ardle related a case in which a tumour, the size of half an orange, projected over the junction of the second costal cartilage with the sternum. Pulsation was distinct and distensile; there was dulness over the upper third of the sternum; cough was distressing and persistent, In this case, after a severe fit of coughing pus was expectorated, and the tumour collapsed, thus rendering certain the diagnosis of tubercular abscess already made. Free incision and removal of the cartilage of the second rib allowed free access to a cavity behind the sternum. This he found contained tubercular matter, which he removed with a Volkmann's scoop, which during operation was constantly tilted upwards by the aorta. Plugging the cavity with iodoform gauze completed the operation, and the case progressed favourably. This case illustrates the value of Mr. Barton's communication.

Sir William Stokes fully concurred in what the Chairman said as to the great clinical importance of the remarkable case Mr. Barton had detailed, and which illustrated so well the great difficulties that at times surround the diagnosis of such cases. Mr. Barton had alluded to the historic case which was connected with Mr. Dease. The facts were not quite accurately stated by Mr. Barton. The case occurred in the old Meath Hospital, now the site of the Coombe Hospital; Dr. Whitley Stokes, S.F.T.C.D., then one of the physicians to the hospital, was present, and related the particulars of the occurrence to his son, Dr. William Stokes, who succeeded him. The case was a mixed one of aneurysm and abscess, the aneurysm being ilio-femoral, around the sac of which an abscess formed. The abscess was freely opened, and the hæmorrhage being uncontrollable, the patient sank. Mr. Dease exhibited no emotion, visited the patients in all his wards, and then returned home; he then entered his study, and with the same instrument he had operated on the abscess, he opened his own femoral artery. This tragical event was a proof, if one were wanting, of how deeply at times men may feel without giving any expression to it.

Mr. Myles, when discussing the question of diagnosis, gave details of a case which occurred during his student days, under the care of the late Mr. B. M'Dowel, and in which a patient suffering from innominate aneurysm was cured by medicinal treatment, and who afterwards developed a fluctuating swelling in the neighbourhood of his right sterno-clavicular joint—pulsating, growing rapidly, painful, and tender. Every-one who had followed the case believed this swelling to be a recurrence of the aneurysm; Mr. M'Dowel, however, not only disagreed with the general opinion, but declared his intention of cutting into the swelling. He did so to the horror of those standing near, and fortunately verified his diagnosis. Mr. Myles asked if the temperature of Mr. Barton's case were noted, and on what hypothesis other than that of an existing empyema the dulness on percussion and absence of breath-sounds in left side were explained.

Trephining for the Evacuation of a Cerebral Cyst and Word-blindness.

Mr. Wheeler communicated his cases of trephining—the first for the evacuation of a cerebral cyst; the second for uncomplicated "Word-blindness." The first case had reference to a lady, forty-four years of age, whose history, as recorded to him (Mr. Wheeler), described her as having been subjected to some domestic mental annoyance in the summer of 1888, and that she became partly unconscious about one hour after breakfast. She had right facial paralysis and loss of power in her right hand and arm, as also in her right leg—at that time her speech was also affected.

When he (Mr. Wheeler) was consulted about her in the November of above year, she was suffering from facial paralysis, and partial loss of power in her right upper and right lower limbs, also from aphasia and agraphia. He had recommended an operation at this date, but it was not until the lady became paralysed in her upper and lower limbs with aphemia and amnesia that the operation was performed, six months after he had several times recommended it. The site of the operation was at the left parietal eminence; four or five ounces of fluid were evacuated. The patient's speech completely recovered, of which he gave examples; also the paralysis of her left upper and lower limbs. Her right upper limb regained its powers so as to be as strong as when he first was consulted about her. As an evidence of her intelligence after the operation, she noticed and inquired about a telegram she saw in her husband's hand. He (Mr. Wheeler) concluded by detailing his reasons for his diagnosis and localisation, and also described aperceptive aphasia from which she suffered. The patient lived for five days after the operation, which was only performed as a *dernier ressort*, and six months after he had first advised it.

He also described a case in which he trephined for uncomplicated word-blindness. This patient has recovered completely (now two and a half years ago). The site of the operation was nearly similar to that recorded in the preceding case, and designated by an injury in that region.

Mr. Harley said, as one of those who was present at this operation, and witnessed the very marked result of it, he might be permitted to say a few words—chiefly in corroboration of what Mr. Wheeler had described to them. As it had occurred that this patient had been on several occasions under his care during temporary absences of Mr. Wheeler, he was fully aware of the state she was in before he saw her on the table, and could better realise the sudden return of consciousness and motor power, not only in remarking in her husband's hand the telegram, and asking from whom it came, but before he (Mr. Harley) left the room she had put her hand up to her head. The late Dr. Corley was present, and he thought his (Dr. Corley's) delight, when he saw the fluid in the aspirating needle, was quite equal to that of Mr. Barton when he saw the pus, in his case of "Aneurysm or Abscess," just read by him. He congratulated Mr. Wheeler most warmly on the success of the operation, and the brilliancy of his diagnosis.

Mr. Wheeler, in reply, could not state exactly what the lady died of, as an examination was not granted. Her death, he believed, was reported as from syncope. In his experience convulsions were not common in cysts of the brain, as above described.

The Section then adjourned.

SECTION OF MEDICINE.

President—J. Magee Finny, M.D.; President of the Royal College of Physicians of Ireland.

Sectional Secretary—A. N. Montgomery, M.R.C.P.I.

Friday, May 27, 1892.

The President in the Chair.

Specimen by Card.

Dr. J. O'Carroll exhibited a brain illustrating the effects of lead.

The Limits of Medicine and Surgery in Disease of the Vermiform Appendix.

Dr. C. B. Ball drew attention to the fact that cures of so-called peri-typhlitis almost invariably originated from ulceration of the vermiform appendix, often due to the presence of a foreign body, and he consequently accepted the American name of "Appendicitis" for the disease. He pointed out that as the appendix was altogether covered with peritoneum the disease was always, in the first place, intra-peritoneal, but that limiting adhesions might render an abscess for practical purposes extra-peritoneal. He discussed the three clinical types of disease—(1) where there was inflammation without suppuration; (2) where localised abscess formed; (3) where diffuse septic peritonitis followed a sudden perforation of the appendix. The first tended to spontaneous recovery in a day or two; the second might present as a lumbar or iliac abscess, or more rarely as an intra-abdominal abscess coming directly forwards. Of this form he described two cases: in one, a female aged eighteen, there was a tumour on the right side larger than her head, tympanitic all over; incision gave exit to a large quantity of fœtid gas and but little pus. A fæcal fistula remained for 12 months, but eventually recovery was perfect. The second case, a female aged thirty-five; the gas-abscess was still larger, being as large as a gravid uterus at full time, hanging down over the thigh. Incision and drainage were here also successful.

Of cases of diffuse peritonitis from appendicitis, Dr. Ball detailed two cases in which he had performed laparotomy. The first, a girl aged sixteen, was operated on on the third day; peritonitis was universal, and there were no limiting adhesions. A large ragged ulcer was found in the appendix, which was amputated, and the patient recovered perfectly.

In a similar case in a man, aged nineteen, the symptoms of peritonitis were even more acute, the intestine livid and dilated; a perforation was found in the vermiform appendix, which was amputated; death, however, followed in 28 hours.

Dr. Ball suggested that surgical treatment should be had recourse to—(1) where, at the end of 24 or 36 hours, the symptoms of appendicitis are progressive instead of subsiding; (2) where a distinct tumour is present; (3) *immediately* on the diagnosis of diffuse peritonitis being made; and (4) in some cases of relapsing simple appendicitis. He was, however, strongly of opinion that the great majority of cases of appendicitis began to decrease within the first 24 hours of the attack, and such should be treated on purely medical lines.

DR. JAMES LITTLE spoke of the difficulty in making the diagnosis when there are only symptoms of general peritonitis, but no indication of localisation of the mischief in the cæcal region. Then there is the further difficulty of determining when there is little or no prospect of a cure taking place without operation. We all know that patients have recovered from repeated attacks of perityphlitis without operation, and the real difficulty is to know when there is little or no hope of recovery without surgical interference. Cases such as the two first narrated by Dr. Ball are plain enough: we have a localised abscess shut off from the general sac of the peritoneum, but such cases he thought rare, and the real difficulty arose in knowing when there is danger of general peritonitis; if we wait until this has taken place, surgical treatment, however skilful, affords but a small chance of relief, and yet one hesitates to propose a laparotomy when the inflammation may remain limited to the post-cæcal region.

DR. HEUSTON called attention to the position of the abscess in relation to the peritoneal cavity as noted in Dr. Ball's paper. This is of importance, as it was so recently thought that perityphlitic abscesses were extra-peritoneal in their position, whilst in reality abscess was, in 99 out of 100 cases, within the peritoneal cavity, although probably localised by adhesive peritonitis in the immediate region. Among the cases he had seen, in no instance has the abscess been extra-peritoneal in its position; and with reference to the liability to diffuse suppurative inflammation, the speaker considered this is frequently to be accounted for by the position and anatomical relations of the appendix—viz., if this process be free and have a well-marked mesentery and large projecting over the brim of the true pelvis, there is a much greater liability for diffuse suppuration than if the process have little or no mesentery and be situated within the false pelvis posterior and internal to the cæcum. The importance of McBurney's spot in those cases depended, in his opinion, on the stage to which the case has advanced, as in the cases which have come under his observation, where diffuse suppurative inflammation existed, the seat of pain was nearly invariably to the left of the median line, so he looked on this spot as being of value only in the early stage before diffuse inflammation has come on.

DR. H. C. TWEEDY drew attention to the great difficulty in making an accurate diagnosis in cases of perforation of the appendix followed by peritonitis. The situation of the pain does not always give early information. It may occur on the opposite side. It may occur in the epigastrium and elsewhere. The temperature is an equally fallacious guide, as in many cases the temperature may run an almost normal course, or else may be characterised by unaccountable variations. The pulse, as a matter of fact, gives a surer indication of the condition of the patient than any other sign. If the peritonitis be progressive the pulse becomes more frequent and thready, and this condition becomes more marked as the hours go on. It seems desirable to have the advantage of a surgeon's opinion, with a view possibly to an exploration. Public opinion is happily becoming more educated on this point, and is becoming more alive to the fact that the danger of opening the abdomen under proper aseptic precautions has now been reduced to a minimum, and therefore in cases where the symptoms continue urgent after 36 hours (as suggested by Dr. Ball in his paper) the danger of delay should be clearly explained to the patient's friends and the necessity of an operation insisted on, which will in many cases be instrumental in saving life.

Dr. Walter G. Smith thought that the important point for the physician was a careful balanced judgment upon the merits of each case rather than reliance upon definite rules as to time of interference. Omitting the cases where the accuracy of the diagnosis is confirmed by the abdominal section, three surprises may await the physician and surgeon—(*a*) The diagnosis may be wrong, yet the condition of things found may be remediable by operation. (*b*) Something unexpected may be found, irremediable by operation and fatal in result. (*c*) Nothing definitely wrong may be discovered, and yet the patient may recover, and an inexplicable cure has often resulted. In cases (*a*) and (*c*) the result is equally satisfactory to the patient; in (*b*) death is inevitable in any case. There is little danger nowadays of premature operation, whereas it is certain that many patients have been lost through delay, ignorance, or timidity upon the part of the medical attendant.

Dr. J. W. Moore expressed his entire appreciation of the triumphs of surgery in cases of deep-seated intestinal inflammation. At the same time he adduced two instances of such accidents in which patients, whose condition at one time was critical in the extreme, made good recoveries without any surgical interference whatever. Of these the first was a case of perityphlitis occurring in a young gentleman, in which the late Dr. Robert M'Donnell gave valuable surgical advice. Purulent diarrhœa suddenly occurred, and the patient made an uninterrupted recovery. The second case was that of a middle-aged woman, in whom a perinephric abscess finally discharged by the bowel—a communication having been established with the colon after some weeks of gravest illness. Large quantities of pus escaped by the bowel, while the urine also deposited pus in astonishing amount, owing, apparently, to pyelitis.

Dr. R. A. Hayes related a case which illustrated one difficulty in diagnosis occurring in a boy, aged fourteen, who exhibited all the symptoms of acute typhlitis with general peritonitis, but who subsequently proved to be suffering from enteric fever, and finally recovered.

Dr. Parsons believed that, for practical purposes, there were three varieties of typhlitis—(1) simple, (2) associated with formation of abscess, (3) associated with diffuse acute peritonitis. Ninety per cent. of all cases of typhlitis are stated to recover under purely medical treatment. There could be no doubt as to the necessity for surgical interference for the second class, and the great difficulty consists in making a diagnosis between class one and three, but a steady increase in the frequency of the pulse, combined with collapse, pointed strongly to perforation. For such cases operation was the only hope, and no time should be lost in opening the abdomen.

Dr. H. T. Bewley believed that cases of simple perityphlitis very often lasted a week or more, and then gradually got well without any evidence of an abscess having formed, and in which no diffuse peritonitis occurred. He had himself treated five cases of perityphlitis, in which, after a week or ten days, the symptoms gradually subsided, and which ended in recovery. He objected to the rule, laid down especially by American surgeons, that if a case was not better at the end of 36 hours it should be operated on.

Dr. Ball, in reply, thanked the physicians, especially his colleagues, for the facilities afforded him of early consultation in cases of peritonitis. He agreed with previous speakers in the great difficulty of diagnosticating the source of early peritonitis, but thought the chief thing was to diagnosticate the fact of its presence in deciding on laparotomy. He also agreed with Dr. Parsons in thinking a rapidly-increasing pulse a far more reliable sign than high temperature alone. The limit of 36 hours did not mean that the patient was well by that time; but if the disease was markedly progressive at that time it might be held to indicate one of the more severe forms.

A Case of Intra-laryngeal Growth.

Dr. R. H. Woods said: The patient, a female, aged sixteen, had suffered for three months previous to her admission to hospital from enlarged glands in the neck, and for the previous fortnight from aphonia and difficulty in breathing.

The laryngoscope revealed a polypoid tumour in the subchordal space, the base or pedicle being attached to the anterior wall. The tumour was seen to move slightly up and down with the air current. There was some infiltration of the subchordal mucous membrane at the posterior part, just below the arytenoids. There was no history of specific disease, and non-specific neoplasms of the air-passage below the true chords, that there was some doubt as to its nature. The glands in the neck and her somewhat strumous appearance gave us the idea that it was an inflammatory neoplasm, probably strumous. She was accordingly put on large doses of the syrup of iodide of iron.

Two days later tracheotomy was performed, and the tumour subsequently disappeared without further surgical interference.

Dr. N. Falkiner asked Dr. Woods if there was any discharge of pus or serum during or subsequent to the operation which would point to the tumour as being an inflammatory growth.

Dr. Hayes congratulated Dr. Woods on the result of his case, and mentioned, as an interesting fact, that new growths of the larynx appear to be comparatively rare in Ireland. He considered that the patient's recovery was accelerated by the physiological rest afforded the larynx by the tracheotomy.

Dr. Woods, in reply, attributed the recovery partly to the physiological rest afforded to the larynx by operation and partly to the influence of iodide of iron. He quite agreed with Dr. Hayes as to the rarity of laryngeal tumours in this country, his experience going to show that they were confined for the most part to carcinoma and tertiary syphilis.

The Section then adjourned.

RECURRENCE OF MAMMARY CARCINOMA.

In the *N. Y. Medical Record* of February 27th, 1892, will be found an interesting paper on this subject by Dr. F. S. Dennis, of New York. In his experience carcinoma is, irrespective of age, more than twice as prevalent amongst the whites as amongst the blacks; and it is rare amongst the Indians. The Germans are more liable than the Irish, and these more than the native whites. Dr. Dennis had amputated the mamma 71 times, opening the axilla and removing the glands in nearly every case. One hæmophilous patient bled to death. She included, the mortality was 1·4 per cent.; but this was the only death in the series. There was no case of pyæmia, septicæmia, erysipelas, or abscess. Billroth puts the death-rate of these operations at 23 per cent. In 33 cases of pure carcinoma there were 8 permanent cures—*i.e.*, eight patients had passed three years without recurrence. Deducting two cases whose histories were unknown, we have over 25 per cent. of "permanent" cures. Assuming that some of the cases which had not yet reached the three-years limit would ultimately pass it, Dr. Dennis claims to have 30 per cent., at least, of permanent cures by extirpation of the breast for carcinoma.

CLINICAL RECORDS.

Extraction of a Tooth followed by Cellulitis, Œdema Glottidis, and Laryngo-tracheotomy. By W. Langford Symes, Kiltegan.

Apart from the interest and urgency usually attaching to bronchotomy in all its varieties, its trivial origin in this instance, the dangers in administering chloroform, and the difficult conditions under which one may be called upon to open the windpipe, are additional inducements to record the following notes:—

On a cold, frosty December day (19th), I extracted a loose upper bicuspid tooth from a large able-bodied man, aged forty, after which he resumed work. He came home at night with a sore and swollen face, and within the next four days was attacked by inflammation of the deep cervical glands with considerable dysphagia. A hard lobulated tumour, with sharply defined posterior border, was situated in the digastric space, enveloping the tendon of the muscle. He was put on antiphlogistic treatment with quinine, aconite, and chlorate of potassium, gargles containing borax, with fomentations, poultices, and an aperient, but continued to disimprove. By the eighth day the cellulitis, very deep, hard, and not implicating the skin, had spread over the side and front of his neck, displacing the larynx and trachea considerably to the right. A deep incision was now made between the vessels and the trachea through the tough and "creaking" tissues, but nothing escaped save a little blood. It cut like a malignant tumour. He was then ordered a mixture of tartar emetic with belladonna, but quickly developed œdema of the soft palate and pharynx, with great difficulty in breathing. A deep dissection to relieve tension was now strongly urged but objected to by his friends. Stridor set in with "orthopnœa" and "gurgling," "blubbering," respiration, slightly relieved by freely scarifying the pharynx. By the twelfth day these signs were much aggravated; he became cyanosed with cold, clammy sweats, and violently delirious, while his stridor was audible in the street outside his house. In this stage chloroform eased his breathing, but markedly increased his lividity. His pharynx was intensely œdematous, and completely filled by the soft palate which resembled a livid gelatinous polypus. On the 13th it was decided to perform laryngotomy in the first instance, and if necessary afterwards to enlarge the opening. With this object he was given about half a dram of chloroform, when he immediately became asphyxiated, black in the face, stopped breathing, and struggled violently to catch his breath. Snatching the pillows from under his head and throwing it back I was obliged, as he lay in a soft feather bed in the corner of a small cabin, absolutely to sit crosswise on his body to steady him while quickly cutting through his crico-thyroid membrane I opened the windpipe. Frothy blood and air came out but no air went in, for he could not draw his breath. I now cut through the cricoid cartilage and first ring of the trachea, enlarging the wound, and getting in the cannula of Fuller's bivalve tube, ran a goose feather down to the quill in his trachea, inserted the inside tube and kept up artificial respiration. His teeth were so clenched in the convulsion there was great difficulty in pulling out his tongue. This done, he commenced to breathe, but passing from his convulsions into a state of profound coma, could not be roused by any means we could adopt, and snoring loudly through the tube, slept thus for fourteen hours. The tube was kept clear, the room steamed efficiently, and his chest was wrapped in cotton wool and bandaged with flannel. When he awoke the next day his pharynx had become much worse, the œdematous tissues almost filling his mouth. He was ordered a mixture of vinum antimoniale and aconite, with a mercurial and saline purge, while his tubes were removed and cleansed three times in the twenty-four hours. His temperature never rose above 100° nor pulse over 106. He rapidly improved, and on the eleventh day (January 12th) I removed both tubes, and drawing the edges of the wound together with plaister applied a pad with boracic lotion underneath a light bandage. By the fifteenth day—four days after removal—his tracheal fistula was quite impervious to air, and he was in perfect health save a slight huskiness of his voice, the result of his laryngitis.

The unusually slight origin of this case may, I think, be accounted for by the peculiar epidemic influence prevailing at the time, since it was the first of a series of erysipelatous inflammations in the neighbourhood after injuries or operations, but preceding as it did the others was not due to inoculation or infection from them. The danger of giving chloroform in conditions of prolonged dyspnœa is here well exemplified, asphyxia is very likely to come on, and you may not be ready at that very moment to open the windpipe. Under these conditions, where the blood is almost entirely deprived of oxygen, and laden with carbonic acid, the chloroform, by destroying its power of absorption, and thus annihilating its respiratory function, may suddenly produce asphyxia and stop the breathing. That this was not due to spasm of the glottis is clear from the fact that when given the night before it quickly relieved his breathing by relaxing spasm, but markedly increased his lividity. It is in fact such a powerful "reducing" agent that under similar conditions again I would not administer it.

There was some difficulty here in opening the larynx with safety and rapidity, for, in addition to that arising from cyanosis through the turgid tissues of a thick, short, neck, inflamed with cellulitis, he lay in a soft bed in the corner of a wretched cabin, while his violent convulsions in asphyxia, and the displacement of his larynx and trachea to the right, added not a little to the usual urgency of such cases. Again, this man was choked in the *commencement* of his œdema, as it increased enormously after the operation, for so impervious to air had his larnyx become that he could not breathe through his mouth or nose for *three days* while his voice did not return till the fourth day.

Although the crico-thyroid membrane is usually so subcutaneous the wound may yet so deepen after two or three days that the tube will scarcely reach the larynx. This is sometimes surprising, and in the foregoing instance, from the fourth to the seventh day, the fistula measured 1½ inches from skin to mucous membrane.

Of several tubes used I found none to equal a well-shaped "Fuller," with the occasional use of Mr. Morrant Baker's pliant indiarubber cannula. It is probable, however, that whatever tube is first inserted will eventually be the most comfortable, since the granulating tissues so accommodate themselves to its sides, the introduction of one differently shaped causes more or less irritation to the fistula. During this case I was indebted to my friend, Dr. Clibborn, now of the Local Government Board, for his kind and efficient help at the time of the operation.

ANCIENT VACCINATION IN INDIA.

In Dr. Buret's "Syphilis in Ancient and Prehistoric Times" (translated by Dr. Ohmann-Dumesnil, of St. Louis, for the "Physicians and Students' Ready-Reference Series"), it is stated that "vaccine was known in India a few thousand years before Christ." Dr. Michéa, in an article in the *Union Médicale* on the "State of Medicine among the Ancient Hindoos," cites from "the Sacteya Grantham," attributed to Dhauvantari himself, the following passages, which our readers can, no doubt, verify for themselves:—"Take the liquid of the pustules of the cow's teat, or from the arm of a human being, between the shoulder and elbow; place it upon the point of a lancet, and introduce it in the arm at the same place, mixing the fluid with the blood; the fever of variola (*Bhadvidæ*) will be produced. This disease will be mild, like the animal from which it is derived; it need not cause fear, and requires no remedies; the patient may be given the food he desires. You may limit yourself to one cut or you may make as many as six. The pustule is perfect when it is of a good colour, filled with a clear liquid, and surrounded by a red circle. There is a slight fever for one, two, or three days; sometimes a slight chill, a swelling in the armpit, and other symptoms, but all of a benign character, and without danger." These extracts are said to be translations of the Sanscrit text.

SANITARY AND METEOROLOGICAL NOTES.

Compiled by J. W. Moore, B.A., M.D., Univ. Dubl.; F.R.C.P.I.; F. R. Met. Soc.; Diplomate in State Medicine and ex-Sch. Trin. Coll. Dubl.

Vital Statistics

For four Weeks ending Saturday, June 18, 1892.

The deaths registered in each of the four weeks in the sixteen principal Town Districts of Ireland, alphabetically arranged, corresponded to the following annual rates per 1,000:—

Towns	Weeks ending				Towns	Weeks ending			
	May 28.	June 4.	June 11.	June 18.		May 28.	June 4.	June 11.	June 18.
Armagh -	7·0	7·0	21·0	7·0	Limerick -	15·4	19·6	18·2	19·6
Belfast -	27·1	29·1	23·0	24·7	Lisburn -	4·3	17·1	8·6	4·3
Cork -	31·1	28·4	24·9	21·5	Londonderry	15·7	31·4	20·4	14·1
Drogheda	30·7	22·0	17·6	30·7	Lurgan -	45·6	27·4	31·9	18·2
Dublin -	28·0	27·6	23·7	29·8	Newry -	36·2	12·1	16·1	20·1
Dundalk -	20·9	16·8	8·4	20·9	Sligo -	30·9	25·8	30·9	25·8
Galway -	7·6	26·4	22·7	26·4	Waterford -	20·0	20·0	15·0	15·0
Kilkenny	0·0	14·2	18·9	4·7	Wexford -	4·5	13·5	13·5	31·6

In the week ending Saturday, May 28, 1892, the mortality in thirty-three large English towns, including London (in which the rate was 18·8), was equal to an average annual death-rate of 19·4 per 1,000 persons living. The average rate for eight principal towns of Scotland was 22·1 per 1,000. In Glasgow the rate was 26·5, and in Edinburgh it was 17·1.

The average annual death-rate represented by the deaths registered during the week in the sixteen principal town districts of Ireland was 25·7 per 1,000 of the population (unrevised) according to the recent Census.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 4·3 per 1,000, the rates varying from 0·0 in nine of the districts to 22·8 in Lurgan—the 10 deaths from all causes registered in that district comprising 5 from measles. Among the 133 deaths from all causes registered in Belfast are 13 from measles (being equal to the number from that disease for the preceding week), 2 from whooping-cough, 1 from diphtheria, 2 from simple continued fever, 1 from enteric fever, and 6 from diarrhœa. The 45 deaths in Cork comprise 4 from measles, 1 from typhus, and 1 from diarrhœa. The 6 deaths in Sligo comprise 2 from scarlatina. The Registrar of Dundalk District specially reports 1 death from influenza.

In the Dublin Registration District the registered births amounted to 214—115 boys and 99 girls; and the registered deaths to 195—100 males and 95 females.

The deaths, which are 33 over the average number for the corresponding week of the last ten years, represent an annual rate of mortality of 29·1 in every 1,000 of the population. Omitting the deaths (numbering 7) of persons admitted into public institutions from localities outside the district, the rate was 28·0 per 1,000. During the first twenty-one weeks of the current year the death-rate averaged 36·7, and was 5·8 over the mean rate in the corresponding period of the ten years 1882–1891.

The number of deaths from zymotic diseases registered is 37, being 19 in excess of the average for the corresponding week of the last ten years, but 7 under the number for the week ended May 21. The 37 deaths comprise 23 from measles (being a decline of 5 as compared with the number from that cause for the preceding week), 1 from influenza, 6 from whooping-cough, and 4 from enteric fever.

Sixty-seven cases of measles were admitted to hospital, being 6 under the admissions for the preceding week, but 9 over the number for the week ended May 14. Sixty-nine measles patients were discharged, 2 died, and 159 remained under treatment on Saturday, being 4 under the number in hospital at the close of the preceding week.

Nine cases of enteric fever were admitted to hospital against 3 for the preceding week: 26 cases of this disease remained under treatment in hospital on Saturday.

The hospital admissions for the week include, also, 1 case of typhus, but no cases of scarlatina were received: 5 cases of the former and 15 of the latter disease remained under treatment in hospital on Saturday.

The number of deaths from diseases of the respiratory system registered is 35, being 10 under the number for the preceding week, but 6 over the average for the 21st week of the last ten years. The 35 deaths consist of 13 from bronchitis, 21 from pneumonia or inflammation of the lungs, and 1 from croup.

In the week ending Saturday, June 4, the mortality in thirty-three large English towns, including London (in which the rate was 17·4), was equal to an average annual death-rate of 17·9 per 1,000 persons living. The average rate for eight principal towns of Scotland was 20·2 per 1,000. In Glasgow the rate was 23·9, and in Edinburgh it was 18·5.

The average annual death-rate in the sixteen principal town districts

of Ireland was 26·6 per 1,000 of the population (unrevised) according to the recent Census.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 4·5 per 1,000, the rates varying from 0·0 in nine of the districts to 8·2 in Belfast—the 143 deaths from all causes registered in that district comprising 28 from measles (an increase of 15 as compared with the number for the preceding week), 1 from scarlatina, 2 from whooping-cough, 1 from simple continued fever, 2 from enteric fever, and 6 from diarrhœa. The 41 deaths in Cork comprise 1 from measles, 2 from typhus, 1 from whooping cough, and 1 from enteric fever.

In the Dublin Registration District the registered births amounted to 236—111 boys and 125 girls; and the registered deaths to 192—107 males and 85 females.

The deaths, which are 33 over the average number for the corresponding week of the last ten years, represent an annual rate of mortality of 28·6 in every 1,000 of the population. Omitting the deaths (numbering 7) of persons admitted into public institutions from localities outside the district, the rate was 27·6 per 1,000. During the first twenty-two weeks of the current year the death-rate averaged 36·3, and was 5·8 over the mean rate in the corresponding period of the ten years 1882-1891.

The number of deaths from zymotic diseases registered is 35, being 18 over the average for the corresponding week of the last ten years, but 2 under the number for the week ended May 28. The 35 deaths comprise 21 from measles (being 2 under the number from that disease in the preceding week and 7 under the number for the week ended May 21), 1 from typhus,, 2 from influenza and its complications, 3 from whooping-cough, 2 from enteric fever, and 1 from diarrhœa.

The number of cases of measles admitted to hospital is 56, being a decline of 11 as compared with the admissions for the preceding week. Sixty-two patients were discharged, 5 died, and 148 remained under treatment on Saturday, being 11 under the number in hospital on Saturday, May 28.

Only 2 cases of enteric fever were admitted to hospital, against 9 for the preceding week: 20 cases of the disease remained under treatment in hospital on Saturday.

The hospital admissions for the week include, also, 1 case of scarlatina and 3 cases of typhus: 15 cases of the former and 4 of the latter disease remained under treatment in hospital on Saturday.

Thirty-six deaths from diseases of the respiratory system were registered, being 1 over the number for the preceding week and 8 in excess of the average for the 22nd week of the last ten years, They comprise 13 from bronchitis and 18 from pneumonia or inflammation of the lungs.

In the week ending Saturday, June 11, the mortality in thirty-three large English towns, including London (in which the rate was 17·5), was equal to an average annual death-rate of 17·9 per 1,000 persons living. The average rate for eight principal towns of Scotland was 20·8 per 1,000. In Glasgow the rate was 22·7, and in Edinburgh it was 18·3.

The average annual death-rate represented by the deaths registered in the sixteen principal town districts of Ireland was 22·4 per 1,000 of the unrevised population based on the Census of 1891.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 4·0 per 1,000, the rates varying from 0·0 in Galway, Dundalk, Lisburn, Wexford, Kilkenny, and Armagh, to 13·7 in Lurgan—the 7 deaths from all causes registered in the last-named district comprising 2 from measles and 1 from diphtheria. Among the 113 deaths from all causes registered in Belfast are 16 from measles (a decline of 12 as compared with the number for the preceding week), 2 from scarlatina, 4 from whooping-cough, 1 from diphtheria, and 3 from diarrhœa. The 36 deaths in Cork comprise 5 from measles. Of the 13 deaths in Londonderry 1 resulted from enteric fever and 1 from diarrhœa. Of the 6 deaths in Sligo 1 was from typhus and 1 from diarrhœa. The Registrar of Castlereagh No. 1 District, Belfast Union, remarks—"Measles still continues here as an epidemic; no part of the district is exempt."

In the Dublin Registration District the registered births amounted to 158—90 boys and 68 girls; and the registered deaths to 161—76 males and 85 females.

The deaths, which are 6 under the average number for the corresponding week of the last ten years, represent an annual rate of mortality of 24·0 in every 1,000 of the population. Omitting the deaths (numbering 2) of persons admitted into public institutions from localities outside the district, the rate was 23·7 per 1,000. During the first twenty-three weeks of the current year the death-rate averaged 35·8, and was 5·5 over the mean rate in the corresponding period of the ten years 1882–1891.

Thirty-two deaths from zymotic diseases were registered, being 3 under the number for the preceding week, but 13 over the average for the 23rd week of the last ten years, They comprise 25 from measles (showing an increase of 4 as compared with the number from that cause for the preceding week), 2 from influenza and its complications, 1 from whooping-cough, and 1 from diarrhœa.

The number of cases of measles admitted to hospital is 50, being a decline of 6 as compared with the admissions for the preceding week, and 17 under the number for the week ended May 28. Sixty-six measles patients were discharged, 1 died, and 141 remained under treatment on Saturday, being 7 under the number in hospital at the close of the preceding week.

Twelve cases of enteric fever were admitted to hospital, against 2 for the preceding week and 9 for the week ended May 28. Five patients were discharged and 27 remained under treatment on Saturday, being 7 over the number in hospital at the close of the preceding week.

The hospital admissions for the week include, also, 4 cases of scarlatina, but no cases of typhus were received: 15 cases of the former and 3 of the latter disease remained under treatment in hospital on Saturday.

The number of deaths from diseases of the respiratory system registered is 24, being 7 under the average for the corresponding week of the last ten years and 12 under the number for the week ended June 4. The 24 deaths consist of 13 from bronchitis and 11 from pneumonia or inflammation of the lungs.

In the week ending Saturday, June 18, the mortality in thirty-three large English towns, including London (in which the rate was 17·1), was equal to an average annual death-rate of 17·8 per 1,000 persons living. The average rate for eight principal towns of Scotland was 17·5 per 1,000. In Glasgow the rate was 21·2, and in Edinburgh it was 11·2.

The average annual death-rate in the sixteen principal town districts of Ireland was 24·9 per 1,000 of the population (unrevised) according to the recent Census.

The deaths from the principal zymotic diseases registered in the sixteen districts were equal to an annual rate of 4·0 per 1,000, the rates varying from 0·0 in eight of the districts to 15·5 in Sligo—the 5 deaths from all causes registered in that district comprising 1 from typhus, 1 from whooping-cough, and 1 from diarrhœa. Among the 121 deaths from all causes registered in Belfast are 13 from measles (a decline of 3 as compared with the number for the preceding week), 1 from scarlatina, 1 from typhus, 1 from whooping-cough, 2 from diphtheria, 1 from simple continued fever, 1 from enteric fever, and 4 from diarrhœa. The 31 deaths in Cork comprise 2 from whooping-cough. The 7 deaths in Drogheda comprise 2 from typhus and 1 from enteric fever.

In the Dublin Registration District the registered births amounted to 217—112 boys and 105 girls; and the registered deaths to 212—111 males and 101 females.

The deaths, which are 51 over the average number for the corresponding week of the last ten years, represent an annual rate of mortality of 31·6 in every 1,000 of the population. Omitting the deaths (numbering 12) of persons admitted into public institutions from localities outside the district, the rate was 29·8 per 1,000. During the first twenty-four weeks of the current year the death-rate averaged 35·6, and was 5·6 over the mean rate in the corresponding period of the ten years 1882–1891.

Thirty-six deaths from zymotic diseases were registered, being 4 over the number for the preceding week, and 18 above the average for the

24th week ofthe last ten years. They comprise 27 from measles (showing an increase of 2 as compared with the number from that cause for the preceding week), 1 from influenza and its complications, 5 from whooping-cough, and 1 from diarrhœa.

The number of cases of measles admitted to hospital is 39, being a decline of 11 as compared with the admissions for the preceding week, and 17 under the number for the week ended June 4. Sixty-nine measles patients were discharged, 1 died, and 110 remained under treatment on Saturday, being 81 under the number in hospital at the close of the preceding week.

Eleven cases of enteric fever were admitted to hospital, against 12 for the preceding week. Three patients were discharged, 1 died, and 34 remained under treatment on Saturday, being 7 over the number in hospital at the close of the preceding week.

The hospital admissions for the week include, also, 2 cases of scarlatina and 1 case of typhus: 15 cases of the former and 3 of the latter disease remained under treatment in hospital on Saturday.

The number of deaths from diseases of the respiratory system registered is 22, being 5 under the average for the corresponding week of the last ten years and 2 under the number for the week ended June 11. The 22 deaths comprise 9 from bronchitis and 12 from pneumonia or inflammation of the lungs.

METEOROLOGY.

Abstract of Observations made in the City of Dublin, Lat. 53° 20′ *N., Long.* 6° 15′ *W., for the Month of June,* 1892

Mean Height of Barometer, - -	29·979 inches
Maximal Height of Barometer (on 7th, at 9 a.m.), -	30·562 „
Minimal Height of Barometer (on 2nd, at 7 30 a.m.)	29·238 „
Mean Dry-bulb Temperature, - - -	56·5°.
Mean Wet-bulb Temperature, - - -	52·6°.
Mean Dew-point Temperature, - - -	48·9°.
Mean Elastic Force (Tension) of Aqueous Vapour, -	·350 inch.
Mean Humidity, - - - - - -	76·6 per cent.
Highest Temperature in Shade (on 26th) - -	76·8°.
Lowest Temperature in Shade (on 14th), - -	40·0°.
Lowest Temperature on Grass (Radiation) (on 14th),	35·0°.
Mean Amount of Cloud, - - - - -	50·0 per cent.
Rainfall (on 17 days), - - - -	1·671 inches.
Greatest Daily Rainfall (on 1st), - - -	·614 inch.
General Directions of Wind, - - -	W., S.W., N., E.

Remarks.

A changeable, but on the whole a favourable, month. The weather was showery and cool at first—then came an anticyclonic period of beautiful, bright, warm weather, which was broken up by a thunderstorm on the 10th. At this time a remarkable "chill" passed southwards over Europe lasting more or less for a fortnight. The weather was very showery after the 15th. Severe thunderstorms occurred in England on the night of the 28th. More than one-third of the rainfall of the month fell on the morning of the 2nd—the measurement at Greystones, Co. Wicklow, being three times greater than that in Dublin.

In Dublin the arithmetical mean temperature (56·7°) was below the average (57·8°) by 1·1°; the mean dry bulb readings at 9 a.m. and 9 p.m. were 56·5°. In the twenty-seven years ending with 1891, June was coldest in 1882 (M. T. = 55·8°), and in 1879 (the "cold year") (M. T. = 55·9°). It was warmest in 1887 (M. T. = 62·8°), in 1865 (M. T. = 61·0°), and in 1868 (the "warm year") (M. T. = 60·5°). In 1886 the M. T. was 57·5°, in 1888 it was 56·2°, in 1889 it was 59·5°, in 1890 it was 58·1°, and in 1891 it was 59·0°.

The mean height of the barometer was 29·979 inches, or 0·062 inch above the corrected average value for June—namely, 29·917 inches. The mercury rose to 30·362 inches at 9 a.m. of the 7th, and fell to 29·238 inches at 7 30 a.m. of the 2nd. The observed range of atmospherical pressure was, therefore, 1·124 inches—that is, more than an inch and one-tenth.

The mean temperature deduced from daily readings of the dry bulb thermometer at 9 a.m. and 9 p.m. was 56·5°, or 3·6° above the value for May, 1892. Using the formula, *Mean Temp.* = *Min.* + (*max.*—*min.* × ·465), the value was 56·1°, or 1·1° below the average mean temperature for June, calculated in the same way, in the twenty-five years, 1865–89, inclusive (57·2°). The arithmetical mean of the maximal and minimal readings was 56·7°, compared with a twenty-five years' average of 57·8°. On the 26th the thermometer in the screen rose to 76·8°—wind, S.W.; on the 14th the temperature fell to 40·0°—wind, N.E. The minimum on the grass was 35·0° also on the 14th.

The rainfall amounted to 1·671 inches, distributed over 17 days. The average rainfall for June in the twenty-five years, 1865–89, inclusive, was 1·817 inches, and the average number of rainy days was 13·8. The rainfall was, therefore, slightly below, while the rainy days were much above, the average. In 1878 the rainfall in June was very large—5·058 inches on 19 days; in 1879 also 4·046 inches fell on 24 days. On the other hand, in 1889, only ·100 of an inch was measured on 6 days; in 1887 the rainfall was only ·252 of an inch, distributed over only 5 days: in 1874 only ·405 of an inch was measured on 9 days; and in 1868 only ·677 of an inch fell on but 6 days. In 1888 the rainfall was as much as

3·045 inches, distributed over as many as 18 days. In 1890 it was 1·930 inches on 18 days, and in 1891 it was 2·753 inches on 14 days.

High winds were noted on 8 days, but the force of a gale was not attained on any occasion. Temperature reached or exceeded 70° in the screen on 4 days, as compared with 17 days in 1887, only 1 day in 1888, 10 days in 1889, only 2 days in 1890, and 6 days in 1891. Thunder was heard on the 10th and 23rd, and hail fell on the 2nd and 22nd.

The weather remained in a changeable, showery, and squally condition throughout the period ending Saturday, the 4th. Atmospherical pressure was lowest in the northwest, highest over France and Germany—hence a prevalence of gusty S. to W. winds in the British Islands. At exposed stations the force of the wind was considerable at times. On Wednesday, the 1st, hail fell at many British stations and thunder and lightning were prevalent. On Thursday afternoon heavy hail showers passed over Dublin, in the rear of a well-marked cyclonic system which had travelled in a north-north-easterly direction across Ireland during the previous night. This depression had caused a very heavy rainfall in most parts of this island—·95 inch being recorded at Roche's Point in Cork, ·91 inch at Donaghadee in Down, and no less than 1·85 inches at Greystones, Co. Wicklow. Another depression travelled in the same direction across Ireland on Saturday, causing clouds and rain and finally a fresh S.W wind.

The record of the week ending Saturday, the 11th, is in all respects favourable—hot sunshine and a forcing warmth having succeeded the clouds and frequent showers of the previous three weeks. At the beginning and close, no doubt, the distribution of atmospherical pressure over the British Islands was cyclonic, and the weather was showery and thundery—particularly in England. From Monday to Thursday inclusive, however, an anticyclone with moderate or slight barometric gradients lay over the British Islands, the North Sea, Holland, Belgium, and the northern half of France. During this period the sky was for the most part cloudless and the sun's rays were unusually powerful, so that on Thursday the shade thermometer rose to 83° at Leith and Loughborough, 82° at Cambridge, 79° at York and Liverpool, 78° at Nairn and Oxford, and 77° at Parsonstown. On Friday the maximum in London was 83° and at Cambridge 85°. The prevalence of local fogs kept temperature very low on the S.E. coast of England on Tuesday and Wednesday, and on Friday morning an excessive fall of the thermometer took place all over Scotland, where Thursday had been a very hot day. On Friday thunderstorms broke out in many parts of the country—between 1 and 2 p.m. thunder was frequently heard to the westward of Dublin, but the weather remained fair and bright in the city. On Saturday, however, heavy showers of rain fell. In Dublin the mean height of the barometer was 30·094 inches, pressure ranging from 29·672 inches at 9 a.m. of

Sunday (wind, W.N.W.) to 30·362 inches at 9 a.m. of Tuesday (wind, E.S.E.). The corrected mean temperature was 60·9°. The mean dry bulb temperature at 9 a.m. and 9 p.m. was 60·4. The highest shade temperature was 74·7° on Wednesday, the lowest was 51·0° on Saturday. Rain fell in measurable amount on one day (Saturday), the record being ·092 inch. The prevailing winds were E. and W.N.W. Thunder occurred on Friday.

The most striking feature of the weather of the week ended Saturday, the 18th, was the owness of the temperature over North-western Europe. At the beginning, indeed, it was very hot in the South of France, but after a succession of thunderstorms the prevailing "chill" penetrated to that region also. The type of distribution of atmospherical pressure was mixed. Anticyclonic systems, or areas of comparatively high barometer, were found on most days off the western coasts of Ireland, while cyclonic systems, or areas of relatively low barometer, passed in a southerly or south-easterly direction across Great Britain and the North Sea. Hence the northerly winds and low temperatures of the period—also the showers which fell so frequently in most parts of the British Islands, especially on Sunday and after Wednesday. On the first-named day hail-showers fell over Scotland and the north-east of England. Up to Saturday the highest temperature recorded at any British station, reporting daily, was 67°, recorded at Leith on Wednesday. In Dublin the mean height of the barometer was 30·100 inches, pressure ranging from 30·239 inches at 9 p.m. of Monday (wind, N. by E.) to 29·956 inches, at 9 p.m. of Saturday (wind, N.N.W.). The corrected mean temperature was 51·2°. The mean dry bulb temperature at 9 a.m. and 9 p.m. was 51·9°. The shade thermometers rose to 61·5° on Thursday, having fallen to 40·0° on Tuesday. Rain fell in measurable quantity on three days, the total fall being ·075 inch, of which ·042 inch was recorded on Saturday. The prevailing winds were northerly. The mean temperature was 9·7° below that of the previous week.

The weather remained in a very changeable, cloudy, showery condition during the week ended Saturday, the 25th, but temperature showed a decided advance upon that of the previous week. At the beginning, no doubt, it was still very cold, the night minima being particularly low for the time of year, but the last two days were genial and (as regards temperature only) summerlike. The type of distribution of atmospherical pressure was cyclonic throughout, and on Thursday and Friday a well-marked cyclone of considerable and increasing energy travelled up the English Channel and across the North Sea to Denmark causing very heavy rains in the S.E. of England. Near the centre of this system at 8 a.m. of Friday the barometer read as low as 29·17 inches (at Fanö, in Denmark). In and about Dublin more or less rain fell on every day of the week, but the total measurement was not large. Hail fell in places on Wednesday and Thursday, and shortly after midday on the latter day a sharp thunderstorm passed southeastwards to the eastward of the city. In Dublin the mean height of the barometer was 29·833 inches, pressure ranging from 29·919 inches at 9 a.m. of Friday (wind, S.W.) to 29·700 inches at 3 p.m. of Saturday (wind, W.S.W.) and 29·710 inches at 9 a.m. of Thursday (wind, N.N.W.). The corrected mean temperature was 55·2°. The mean dry bulb temperature at 9 a.m. and 9 p.m. was 56·1°. The screened thermometers fell to 45·4° on Sunday and Monday and rose to 67·2° on Saturday. Rain fell in measurable quantity on six days, the total amount being ·444 inch, of which ·180 inch was credited to Thursday. The prevailing winds were N.W. and S.W.

The closing period of the month (26th–30th) is notable chiefly for a thunderstorm depression, which, in the interval between Tuesday morning (the 28th) and Thursday morning (the 30th), travelled in a north-easterly direction from the Bay of Biscay up the English Channel and across the North Sea to the South of Sweden. In its passage it caused thunderstorms of great intensity and heavy downpours of rain and hail over the greater part of England (the South-western counties, however, escaping) as well as in parts of France, Belgium, Holland, and Denmark. As much as 1·6 inches of rain were registered at Liverpool and York in this storm. In Dublin the sky on Tuesday, the 28th, was covered with an uniform sheet of cirro-stratus cloud, moving apparently from W. or S.W., while there was an easterly under-current, the wind becoming N.E. and N. at night. Rain fell from 3 p.m., but only to the amount of ·142 inch in the city. The heat was very great in Dublin on Sunday, the 26th, when the thermometer rose to 76·8° in the screen. A decided "chill" followed on Monday afternoon, and Tuesday was almost cold.

The rainfall in Dublin during the six months ending June 30th has amounted to 11·770 inches on 97 days compared with 8·748 inches on 77 days during the same period in 1891, 13·413 inches on 94 days in 1890, 10·576 inches on 97 days in 1889, 12·113 inches on 87 days in 1888, 6·741 inches on 67 days in 1887, and a 25 years' average of 12·313 inches on 95·4 days.

At Knockdolian, Greystones, Co. Wicklow, the rainfall in June, 1892, was 4·235 inches, distributed over 13 days. Of this quantity 1·850 inches fell on the 1st, ·780 inch on the 4th, and ·370 inch on the 28th. The total fall since January 1 has been 13·783 inches on 80 days.

PERISCOPE.

GOLD CURE FOR DRUNKENNESS.

ILLINOIS has been excited over the cure of drunkenness by chloride of gold. It is said that Dr. Gray, of Indiana, regularly practises the following treatment:—"When he receives a patient he sets in his room a bottle containing a pint of good whiskey, instructing the patient that he can take all he wishes. The doctor immediately commences and gives him four hypodermic injections each day, each containing one-tenth of a grain of the chloride of gold and sodium, and one-fortieth of a grain of nitrate of strychnine, and gives a mixture to be taken by the mouth containing the same with some atropine. He sees the patients four times a day, and rapidly increases the gold and strychnine until the symptoms show that they are getting all they will bear. The first day the patient drinks pretty heavily of the whiskey in his room. The second day he begins to lose his desire for it. By the evening of the third day or the morning of the fourth he is totally sick of it, and will not take any more. The treatment is carried on from three to six weeks." It seems to be a great success.—*Am. Pract. and News.*

MALIGNANT NOMA.

DR. HUBBARD reports from Mexico, in the *N. Y. Medical Record*, a remarkable case of symmetrical gangrene, without any apparent cause, in a boy of eight. When he first saw the child, at midnight, and removed the cloths in which his face was wrapped, a mass of putrid flesh came away, leaving a hole in the cheek two inches in diameter. There had been no symptom but severe pain in the part. At daylight pain set in in the other cheek, on which a dark spot was visible. Dressing was applied, and when it was removed, two hours after, the cheek came away with it. There was no inflammation of the ordinary kind. In two hours more the nose was gangrenous. The boy died in 48 hours from the first attack. He was of pure Indian race.

ANNALES DE LA POLICLINIQUE DE LILLE.

WE have received the first number of this journal, issued in January last. It is the quarterly organ of the Lille *Policlinique*, which was established in September, 1890, for the medical relief of an intermediate class between the objects of the *Bureau de Bienfaisance* and the ordinary hospital patients. The institution is in fact what we call a public dispensary, and since its establishment has assisted nearly 600 patients, besides performing operations and visiting the sick at their homes. In one of the reports we note some statistics of infant mortality at Lille interesting for comparison. The average death-rate of children under one year of age is 21·23 per cent., or 100 deaths on 471 births. Of 100 children only 50 attain the age of five years. Before Lille became a great city the infant mortality was only 16·50. Disorders of the digestive and respiratory organs are, as usual, the principal causes of death.

OLEOMARGARINE.

The *Journal of the American Medical Association* summarises a paper on oleomargarine by Dr. Caldwell, Professor of Agricultural Chemistry in Cornell University. He thus describes the process of manufacture:—"Caul fat is first cooled and washed, and then rendered at a temperature of 120° to 150° F. The clear fat is then run into wooden tanks, and the greater part of the stearine, the hard fat contained in it, allowed to crystallise out. The liquid fat separated from the stearine is called 'oleo oil.' A similar product, prepared from lard, is allowed to retain its stearine, and is known by the trade name of 'neutral.' The 'oleo oil' and 'neutral' are then mixed in certain proportions, and constitute 'oleomargarine.' This substance is free from flavour and colour, and to become 'butterine' is churned with milk or cream, by which a certain proportion of the flavouring elements of butter are mixed with it, and impart to it the taste and odour of natural butter." This substance is now an important article of food; so that its wholesomeness and nutritive value ought to be highly interesting to the physician. "It has not yet been shown to be a medium for the transmission of pathogenic germs, and there can be but little doubt but that it is much cleaner than the bulk of the butter put on the market." It is found to be but slightly less digestible than butter.

ON THE TREATMENT OF ALOPECIA AREATA.

So many have found this disease refractory to every form of treatment that we are sure all will be glad to have their attention drawn to an article in the *Journal of Cutaneous and Genito-urinary Diseases*, February, 1892, by Dr. L. Duncan Bulkley, of New York, entitled "A Therapeutic Note on Alopecia Areata." "In the following brief note," writes Dr. Bulkley, "I wish to call attention to a single method of treatment in alopecia areata which I have employed for a number of years most satisfactorily, but which does not appear to be generally known, although I have casually mentioned it on several occasions." The method consists in painting the affected parts—not much more than a couple of square inches being attacked at once—with a 95 per cent. solution of pure carbolic acid. A small swab of cotton wool on the end of a stick or wooden toothpick is employed, and having been dipped in the acid is "at first lightly brushed over the affected area, which is then afterwards well and firmly rubbed with the same for some seconds." The application is usually extended a little outside the affected area. No sloughing, or unpleasant consequence of any sort has ever followed, and one or two weeks interval is generally allowed between the applications which may require to be repeated three or four times, though in a few cases one application is sufficient to effect a cure. The skin dries up and whitens, perhaps with vesiculation, and after a week or ten days drops off leaving a red surface. "By the expiration of two or three weeks a fine, downy fuzz could be seen, which increased into good hair." Dr. Bulkley gives notes of two very interesting cases in which the result obtained was most satisfactory; and while disclaiming any novelty as to the *modus operandi* of the remedy, which seems identical with that of blistering, he claims for it that "it is a cleanly, convenient, and effective mode of treatment, and one much less troublesome and alarming to the patient than ordinary blistering," adding, moreover, that in his hands it has given better results than any other method with which he is acquainted. Such testimony from such high authority cannot fail to induce others to tread this path of therapeutic progress which promises to lead to such a desirable goal.

BARCELONA.

We have received a number of the *Rivista de Ciencias Medicales de Barcelona*, a bimonthly periodical, of 32 octavo pages. It is in its seventeenth year. The number before us contains five original articles on various professional subjects, and reports of scientific societies in Paris, as well as extracts from other medical journals. We presume that Barcelona maintains other periodicals devoted to medical subjects, as this one can scarcely be considered an adequate representative of our profession in a city of about 200,000 inhabitants. A town of this population in the United States would produce half-a-dozen such journals.

THE POST GRADUATE

Is a monthly journal of medicine and surgery published in New York. Each number contains 32 pages of original matter, well printed, on good paper, and the subscription is only an annual dollar. The issue before us (Jan., 1892) contains four pages of "leaderettes" and twenty-six pages of an article by Prof. Porter on the practical clinical significance of urinary analysis. There is a case of alcoholic paralysis in a child of seven, to whom his fond mother administered daily for two years two bottles of beer and occasional whisky in order to "put some life into him."

THE DUBLIN JOURNAL
OF
MEDICAL SCIENCE.

CONTENTS.

THIRD SERIES, No. CCXLIX.—SEPTEMBER 1, 1892.

PART I.—ORIGINAL COMMUNICATIONS.

PAGE

ART. VII.—The Limits of Medicine and Surgery in Disease of the Vermiform Appendix. By CHARLES B. BALL, M.D., F.R.C.S.I.; Surgeon to Sir Patrick Dun's Hospital, - - - - - 193

ART. VIII.—A Report on the Present Aspect of Dental Caries. By A. W. W. BAKER, M.D., F.R.C.S.I., University Examiner in Dental Surgery, Univ. Dubl., - - - - - - 200

ART. IX.—Notes of a Case of Ruptured Uterus. By P. J. BARRY, L.M. & L.R.C.P.I., L.R.C.S.I.; Senior Assistant Physician to the Coombe Lying-in Hospital, Dublin, - - - - - 206

ART. X.—The March of Cholera in 1892, with Hints on Treatment. By J. W. MOORE, B.A., M.D. Univ. Dubl., F.R.C.P.I.; Diplomate in State Medicine, Univ. Dubl.; Physician to the Meath Hospital, Dublin; Fellow of the British Institute of Public Health, - - 210

PART II.—REVIEWS AND BIBLIOGRAPHICAL NOTICES.

1. The Chinese, their Present and Future: Medical, Political and Social. By ROBERT COLTMAN, Jr., M.D., Surgeon-in-Charge of the Presbyterian Hospital and Dispensary at Teng-Chow-Foo; Consulting Physician of the American Southern Baptist Mission Society; Examiner in Surgery and Diseases of the Eye for the Shantung Medical Class; Consulting Physician to the English Baptist Missions, &c., - - - - - - - 217

2. Transactions of the Association of American Physicians. Sixth Session. Held at Washington, D.C., September 22, 23, 24, and 25, 1891, - - - - - - - - - - 220

3. How to Feel the Pulse, and What to Feel in it. By WILLIAM EWART, M.D. Cantab., F.R.C.P.; Physician to St. George's Hospital; Physician to the Belgrave Hospital for Children, &c., - 223

4. Cardiac Outlines for Clinical Clerks and Practitioners, and First Principles in the Physical Examination of the Heart for the Beginner. By WILLIAM EWART, M.D. Cantab., F.R.C.P.; Physician to St. George's Hospital, &c., - - - - - 224

PAGE

5. A Treatise on the Diseases of Infancy and Childhood. By J. Lewis Smith, M.D.; Clinical Professor of Diseases of Children, Belleview Hospital Medical College; Physician to the Charity Hospital; Physician to the New York Foundling Asylum, &c. - - 224
6. The Extra Pharmacopœia. By William Martindale, F.C.S., late Examiner of the Pharmaceutical Society, and late Teacher of Pharmacy and Demonstrator of Materia Medica at University College. Medical References and Therapeutic Index of Diseases and Symptoms by W. Wynn Westcott, M.B. Lond., - - 225
7. Lead Poisoning in its Acute and Chronic Forms. The Gulstonian Lectures, delivered in the Royal College of Physicians, March, 1891. By Thomas Oliver, M.A., M.D., F.R.C.P.; Professor of Physiology, University of Durham; Physician to the Royal Infirmary, Newcastle-upon-Tyne, - - - - - - - 226
8. Recent Works on Intestinal Surgery:—1. Colotomy, Inguinal, Lumbar, and Transverse, for Cancer or Stricture, with Ulceration of the Large Intestine. By Herbert W. Allingham, F.R.C.S.; Surgeon to the Great Northern Hospital, &c. 2. Diseases of the Rectum and Anus. By Alfred Cooper, F.R.C.S., &c., and F. Swinford Edwards, F.R.C.S., &c., - - - - 229
9. International Medical Magazine: A Monthly, devoted to Medical and Surgical Science. Edited by Judson Daland, M.D., - 231
10. International Clinics: A Quarterly of Clinical Lectures by Professors and Lecturers in the Leading Medical Colleges of the United States, Great Britain, and Canada. Edited by John M. Keating, M.D., Philadelphia; J. P. Crozier Griffith, M.D., Philadelphia; J. Mitchell Bruce, M.D., London; and D. W. Finlay, M.D., London, - - - - - - - 232
11. Medical Communications of the Massachusetts Medical Society, - 233
12. Bath and her Thermal Waters. A scientific and rational view of their use in disease, with a sketch of the History of Bath, a chapter on Massage, and a description of the Baths. By Samuel Craddock, M.R.C.S., - - - - - - - - - - 234
13. Alpine Winter in its Medical Aspects. By A. Tucker Wyse, M.D. (Brux.); L.R.C.P.; M.R.C.S., - - - - - 234
14. On Contractions of the Fingers and on "Hammer-Toe." By William Adams, F.R.C.S. Eng., &c., - - - - 235
15. Coca and Cocaine: their History, Medical and Economic Uses, and Medicinal Preparations. By William Martindale, F.C.S., - 236
16. The Student's Handbook of Surgical Operations. By Frederick Treves, F.R.C.S.; Surgeon to, and Lecturer on Anatomy at, the London Hospital, &c., - - - - - - - 236
17. The Johns Hopkins Hospital Reports. Report on Gynæcology. I. By Howard A. Kelly, M.D. - - - - - - 237
18. The Climatologist. A Monthy Journal of Medicine, devoted to the Relation of Climate, Mineral Springs, Diet, Preventive Medicine, Race, Occupation, Life Insurance, and Sanitary Science to Disease. Edited by John M. Keating, M.D., Frederick A. Packard, M.D., Charles F. Gardiner, M.D., - - - - 237
19. Practical Pathology. A Manual for Students and Practitioners. By G. Sims Woodhead, M.D., F.R.C.P. Ed., - - - 240
20. Ptomaïns and other Animal Alkaloids: their Detection, Separation, and Clinical Features. By A. C. Farquharson, M.D., - - 242
21. The Wife and Mother: A Medical Guide to the Care of her Health and the Management of her Children. By Alfred Westland, M.A., M.D., C.M., - - - - - - 243

PAGE
22. Illustrated Lectures on Nursing and Hygiene. By R. LAWTON ROBERTS, M.D., D.P.H., - - - - - - - 244
23. Guide to the Administration of Anæsthetics. By HENRY DAVIS, M.R.C.S.; Teacher and Administrator of Anæsthetics at St. Mary's Hospital, and Assistant Anæsthetist at the Dental Hospital of London, - - - - - - - - 244
24. Transactions of the American Orthopædic Association, - - 244
25. Saunders' Question Compends—No. 20. Essentials of Bacteriology, being a concise and systematic Introduction to the Study of Micro-Organisms. By M. V. BALL, M.D., Assistant in Microscopy, Niagara University, New York. No. 23. Essentials of Medical Electricity. By D. D. STEWART, M.D., Philadelphia, and E. S. LAWRANCE, M.D., Philadelphia, - - - - - - 245
26. A Junior Course of Practical Zoology. By A. MILNES MARSHALL, M.D., D.Sc., M.A., F.R.S. Assisted by C. HUBERT HURST, Ph.D. 246

PART III.—SPECIAL REPORTS.

REPORT ON PRACTICE OF MEDICINE. By HENRY T. BEWLEY, M.D., Univ. Dubl., F.R.C.P.I.; Assistant Physician to the Adelaide Hospital; and Lecturer on Medical Jurisprudence in Trinity College, Dublin, - - - - - - - - 247

PART IV.—MEDICAL MISCELLANY.

ROYAL ACADEMY OF MEDICINE IN IRELAND:—

SECTION OF PATHOLOGY.

Cancer of the Stomach and Liver. By DR. C. J. NIXON, - 264
Painless Cancer of the Liver. By DR. LITTLE, - - - 265
Human and Fowl Tuberculosis. By DR. PARSONS, - - 266
Rhinoscleroma. By DR. W. G. T. STORY, - - - 267

SECTION OF STATE MEDICINE.

Pulmonary Tuberculosis and Primary Syphilis. By DR. FALKINER 268
Some Modern Methods of Sewage Treatment. By MR. FLINN - 270

CLINICAL RECORDS:—

Thrombosis and Embolism in Fatty Heart: Use of a valuable Stimulant. By W. LANGFORD SYMES, Kiltegan, - - 272

SANITARY AND METEOROLOGICAL NOTES. Compiled by J. W. MOORE, B.A., M.D., Univ. Dubl.; F.R.C.P.I.; F.R.Met.Soc.; Diplomate in State Medicine and ex-Sch. of Trin. Coll. Dubl.:—

Vital Statistics for Four Weeks ending Saturday, July 16, 1892, 276
Meteorology—Abstract of Observations made at Dublin for Month of July, 1892, - - - - - - - - 281

PERISCOPE:—

Operative Procedures at the Base of the Brain, - - - 216
Abuse of Hospital Relief, - - - - - - - 263
Medical Education in the United States, - - - - 275
Administration of Chloroform, - - - - - - 286
Oatmeal Pyrosis, - - - - - - - - 286
Leprosy and Fish, - - - - - - - - 286
Alcoholism, - - - - - - - - 286
Lo Sperimentale, - - - - - - - - 287
The Tercentenary of the University of Dublin, - - - 287
Her Majesty's British Medical Service, - - - - 288
British Medical Service, - - - - - - - 288

NEW DEVELOPMENTS.

Tinctures and Tinct. "Tabloids."

OF all classes of official preparations none have been so deservedly popular, or retained the public favour for so long a period, as that group of more or less alcoholic solutions which we chose to know as "Tinctures."

No appellation in the whole range of pharmaceutical nomenclature is so liable to misinterpretation and misuse; indeed, from a purely philological standpoint, the very word "Tinctures" is inadmissible in scientific pharmacy. Popular though they may have been, yet we think their days are numbered; for in the growing desire of the present day, both on the part of the physician and the pharmacist, to bring about a more rational system—which in this instance means, really, definiteness in the preparation of medicines—we see the necessity of constant constitution and strength. Neither of these qualities, unfortunately, is to be found in the Tincture group.

The indefinite and unsatisfactory character of Tinctures was admitted officially when the proposal to standardise them was finally adopted by the Pharmacopœia Committee of the General Medical Council. But this standardisation, while a distinct step forward, will scarcely save the Tinctures from ultimate extinction, for the simple reason that to keep the strength of a Tincture at a constant and known point this process of standardisation and estimation will have to be frequently repeated! Practically this is impossible; for it is scarcely to be expected that the well-trained pharmacist can devote time and labour to a task which will never repay him. Are pharmacists prepared to do this? We think not. And yet, can they guarantee the strength of, say, Tincture of Nux Vomica a month after the date of standardisation? And who is there that would be rash enough to guarantee the percentage of morphine in the Tincture of Opium three months after the date of standardising? Few, we think, who know the proneness of these preparations to change.

What is the remedy, then? The whole remedy for this state of things we are not able to suggest; but we may say that a step in the right direction, offering very large development, has been made in securing uniformity and reliability in the new "Tabloids of Tinctures." These "Tabloids" are made from freshly standardised Tinctures of various drugs, and consequently are accurate in dosage. Where the exhibition of single drugs can be admitted, these "Tabloids" are immeasurably superior to the liquid preparations. A very important aspect of these "Tabloids of Tinctures" is their value to the devotees of total abstinence; for these Compressed Drugs are absolutely free from alcohol—a piece of information which will be extremely valuable and interesting to this large community. The following have already been submitted to, and gained the approval of, the Medical Profession:—

TINCT. "TABLOIDS."

Belladonna	Tinct.	"Tabloids."	Each "Tabloid"	=	1	minim of the	Official Tincture.
,,	,,	,,	,,	=	5	,,	,,
,,	,,	,,	,,	=	15	,,	,,
Camph Co.	,,	,,	,,	=	5	,,	,,
,,	,,	,,	,,	=	15	,,	,,
Cannabis Indica	Tinct.	,,	,,	=	5	,,	,,
Hyoscyami	,,	,,	,,	=	1	,,	,,
Nucis Vom.	,,	,,	,,	=	1	,,	,,
,,	,,	,,	,,	=	8	,,	,,
,,	,,	,,	,,	=	10	,,	,,
Opii	,,	,,	,,	=	2	,,	,,
,,	,,	,,	,,	=	5	,,	,,
,,	,,	,,	,,	=	10	,,	,,
Zingib. fort.	,,	,,	,,	=	5	,,	,,

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THE DUBLIN JOURNAL
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SEPTEMBER 1, 1892.

PART I.
ORIGINAL COMMUNICATIONS.

ART. VII.—*The Limits of Medicine and Surgery in Disease of the Vermiform Appendix.*[a] By CHAS. B. BALL, M.D., F.R.C.S.I.; Surgeon to Sir Patrick Dun's Hospital.

UNDER the names of perityphlitis and paratyphlitis, we are all familiar with inflammatory conditions of the ileo-cæcal region, but the researches mainly of the American surgeons have demonstrated that it is rarely these inflammations originate in the cæcum proper, but are due to pathological changes in the vermiform appendix. McBurney, who has done so much on this subject, puts down the proportion as 99 of the latter to 1 of the former, while other writers of large experience deny the existence of a cæcal origin for the inflammation altogether; hence the Committee of the New York Medical Society have adopted the word Appendicitis, which, although not free from objection, is preferable as expressing a more accurate pathological significance. It is within the experience of us all that many of these cases get well under purely medical treatment, while on the other hand it is certain that many valuable lives are sacrificed which might have been saved by timely surgical operation; and it has occurred to me that a discussion on the limits of medical and surgical treatment might prove interesting, and be peculiarly suitable to the Medical Section of the Royal Academy. In the following remarks

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[a] Read before the Section of Medicine in the Royal Academy of Medicine in Ireland, May 27th, 1892. [For the discussion on this paper see page 172.]

I will try and avoid going into purely surgical details, and will only adduce cases so far as is necessary to elucidate the subject. At the outset, I would at once disclaim against viewing the vermiform appendix with that extirpating energy which some modern gynæcologists appear to exhibit towards the ovary on the very slightest pretext; on the contrary, I believe strongly that the majority of cases of appendicitis recover well under purely medical treatment; but at the same time it must never be forgotten that even in the apparently most trivial cases, urgent symptoms may at any moment become prominent, and that surgery, to be of use, must be resorted to at an early date. To leave the case until septic peritonitis has spread all over the abdomen, and until extensive meteorism has supervened from paralysis of the gut, is to consign the patient to almost certain death, as, if under these circumstances operation is undertaken, it will almost certainly be fatal, and has been well described as a premature autopsy.

The pathological processes which originate this inflammatory state are subject to some variety. In a large proportion of cases it will be found that there is present in the appendix a foreign body—this may be a fruit stone, grain of shot, or other similar substance which has escaped into the appendix from the cæcum, or an enterolith which has formed *in situ* by the concentric deposit of fæcal matter and mixed phosphates. In either case the pressure of the body may produce necrosis of the epithelial lining of the appendix, and thus allow the septic bacteria, which are so numerous in the fæces, to escape into the submucosa, and give rise to ulceration or gangrene of the appendix. There is great anatomical variability in the orifice leading from the cæcum into the appendix; in some it is well protected by a valvular fold of mucous membrane, while in others it is patulous and the valve entirely wanting. Possibly this patulous state of the orifice, which is probably congenital, accounts in some degree for the fact that this disease is one occurring in early life in the vast majority of instances. In many cases, however, no foreign body or enterolith can be found, and the cause of the initial ulceration must remain doubtful. When an ulcer or gangrene of the appendix takes place, it may be followed by plastic inflammation of the surrounding peritoneum without causing suppuration. This is what takes place in the milder cases which resolve spontaneously. In a second class of cases localised suppuration takes place, and an abscess forms which may point in the lumbar region or iliac fossa, while occasionally an intra-abdominal abscess may form, sometimes of very considerable size. In these cases the size may increase very rapidly by the development of gas, although the quantity of pus is small. There has been much contention as to whether these abscesses are intra- or extra-peritoneal; it will, however, be obvious that as the vermiform appendix is entirely surrounded with peritoneum, they must in the first instance be intra-peritoneal. But the distinction is not of great practical importance, because when adhesions have taken place between the coils of intestine in the immediate vicinity and the parietal peritoneum, the case resembles one in which an abscess has arisen outside the serous sac, the great bulk of the cavity remaining uninvolved, but in all probability the danger of rupture into the general cavity of the peritoneum is greater where the wall of the abscess consists of adhesions only.

Where the floor of the ulcer suddenly gives way without the previous formation of limiting adhesions, extravasation of fæces will take place and septic peritonitis be the inevitable result, the acuteness of the peritonitis, however, being usually less than when the stomach or small intestine is perforated, death not usually resulting in the former until the fourth or fifth day. Mynter has suggested as a reason for this, that when the small intestine is perforated, the movement of the gut in peristalsis distributes the septic matter rapidly over a large surface of the peritoneum, while the more fixed position of the cæcum limits the peristaltic excursions of the vermiform appendix. A more probable explanation, however, is that the very small calibre of the appendix as compared with the other portions of the intestinal tract permits of only a much slower extravasation of fæces. Among the more distant results of ulceration of the appendix may be mentioned the cicatricial closure of the lumen and the dilatation of the distal portion into a retention cyst. In one of the cases recorded by McBurney such was found to be the case. A cyst so formed might, of course, at any time rupture into the peritoneum, but it is not probable that the results would be so disastrous as in primary perforation of the appendix, the fæces not being extravasated.

From the foregoing it is obvious that three clinical types of appendicitis may be recognised, and the classification of Prof. With of Copenhagen is a convenient one:—

1. Peritonitis appendicularis adhæsiva.
2. Peritonitis appendicularis localis.
3. Peritonitis appendicularis universalis.

The symptoms by which the first variety is ushered in are—Sudden severe abdominal pain, usually more marked on the right side, vomiting, and a considerable degree of fever. An examination of the abdomen shows that the muscles of the right side are more rigid than those of the left, and McBurney has pointed out the fact that although the entire abdomen may be painful and sensitive to the touch, one point of extreme tenderness can usually be made out if carefully examined for. For this purpose the tip of one finger only should be used, and the surface of the right side of the abdomen gently palpated. It will then usually be found that the focus of greatest sensitiveness is on a line joining the umbilicus with the anterior superior spine of the ilium, and in the adult about two inches from the latter point; this corresponds with the position of the base of the vermiform appendix. In two cases of simple appendicitis which I recently observed, this proved a very definite and useful symptom. A fulness may also be detected in a few cases, but at the onset a distinct tumour is rarely to be felt. The tendency of this simple form is to rapid resolution; within 24 hours an improvement in the symptoms is usually noticeable, and the patient is convalescent in a few days; in some cases, however, there are frequent recurrences, while it must constantly be borne in mind that even the most simple variety may at any moment merge into one of the graver forms.

The second variety is characterised by the formation of localised abscess, and where the symptoms of the simple appendicitis do not subside in the first day or two, but on the contrary gradually increase, the formation of pus may be expected, and if a tumour is present and the skin becomes œdematous over the iliac fossa, the diagnosis may be made with confidence. The ordinary iliac or lumbar abscess which may ensue as a result of appendicitis possesses no very special points of interest, and all are agreed that when of large size and very obviously fluctuating it should be opened and drained in the usual manner, without any attempt to extirpate the appendix. Should a fæcal fistula ensue it will in all probability close after a time and recovery will be complete, or if a permanent fistula remain it may be dealt with more safely at a future date.

Where, instead of the moderate abscess occupying the iliac fossa or lumbar region, we have an intra-abdominal abscess of considerable size, the diagnosis may not be so easy, while the treatment must be prompt. I can best illustrate this variety by giving the outlines of two cases which have come under my own observation. The first was that of a young lady, aged eighteen, that I had an opportunity of seeing through the kindness of my colleague, Dr. Walter Smith, with Dr. Fitzmaurice, at Tralee. When I saw her, March 25, 1890, she had been suffering from fever and great pain in the right side of the abdomen for three weeks. There was a tumour considerably larger than her head projecting very prominently directly forwards in the right side of the abdomen, and the intestines were all pushed to the left side, which was not much distended. The tumour was markedly tympanitic all over, and I was told that it had increased very rapidly within the previous few days. I made an incision into it and the swelling at once collapsed, giving exit to a quantity of abominably offensive gas, and but a few ounces of thick pus. The wall of the cavity was formed of intestines matted together by adhesions, and the abdominal parietes. It was deemed inadvisable to make any prolonged search for the appendix, and a large drainage tube was inserted. The improvement in the patient's condition was immediate, and the abscess contracted to a fistula, from which flatus and a small quantity of fæces escaped; this gradually contracted and finally completely closed, but not for over a year after the operation. She has recently been up in Dublin in perfect health.

The second case was a female, aged thirty-five, whom I saw in consultation with Dr. Flinn and Dr. Wallace Beatty, January 22, 1891; the appearances were almost identical with the last case, except that the tumour was larger, quite as large as a gravid uterus at full time; it projected directly forwards and overlapped the right thigh; it was tympanitic all over. An incision was made, and again a large quantity of fetid gas escaped and only a small quantity of pus; the cavity was washed out and a large drainage tube introduced, no search being made for the appendix. In this case a fistula also remained, but otherwise the patient rapidly regained health; it is, however, many months since I heard of her, so I am unable to say whether the fistula has yet finally closed.

When extravasation of fæces suddenly takes place from a perforated appendix unlimited by adhesive inflammation, diffuse septic peritonitis is the necessary result. I am convinced that the majority of cases of so-called "idiopathic" purulent peritonitis in young people have their origin in perforation of the appendix. Such cases are to be diagnosticated by the much greater severity of the initial symptom, the frequent weak pulse, and the rapid onset of collapse and meteorism. Under these circumstances the sole chance of saving the patient's life lies in immediate laparotomy, and the surgeon who shirks this duty incurs a grave responsibility. I again crave your indulgence to introduce two illustrative cases, which, however, were attended with different results:—Miss C., aged sixteen, was seen with Dr. Wright, of Dalkey, and Dr. Walter Smith, November 4, 1891. Three days previously she had been seized with violent abdominal pain and vomiting, followed by collapse. When I saw her she complained of the greatest pain on the left side of the abdomen, but the symptoms being held to justify the diagnosis of peritonitis, an exploratory laparotomy was performed. The moment the peritoneum was opened gas escaped. On searching the left side, where pain was most complained of first, it was found that the pain was caused by a spreading peritonitis in that direction, but that as we passed to the right the evidences of inflammation were more marked, the injection of the surface of the intestine being more intense and flakes of lymph more numerous. On raising the cæcum thin purulent fluid escaped from the iliac fossa, and the vermiform appendix appeared intensely inflamed and with a ragged ulcer perforating it; there was no trace of limiting adhesions. The appendix was amputated, the cavity of the peritoneum cleansed as perfectly as possible, and the wound closed without drainage. The patient made a good recovery, and is now perfectly well.

In a second case which I saw with Dr. Tweedy and Dr. James Little—a male, aged nineteen, was operated on, February 6, 1892, the third day of acute peritonitis. On opening the abdomen free gas escaped, the intestines were found violently inflamed and greatly dilated, so much so that they bulged into the wound, and it was only with the greatest difficulty that the appendix could be exposed. It was found perforated by an ulcer near its mesenteric attachment and amputated, the cavity of the peritoneum being cleansed as well as possible. As was to be expected from the condition in which we found the interior of the abdomen, no attempt to rally was made, and death ensued 28 hours afterwards.

In conclusion, I would venture to suggest that appendicitis should be treated on the following lines: Let every case be watched with the greatest care and visited at short intervals, remembering that while the majority will probably subside spontaneously, any one may suddenly develop into the more serious forms. To stop the vomiting by withholding food by the mouth is obviously sound practice, while anodynes in small quantities by limiting peristalsis may undoubtedly be useful, but given in large doses they may be a source of real danger, by masking the onset of grave symptoms which urgently demand operation. If at the end of 24, or at most 36, hours from the onset the symptoms are still *progressive*, the case ceases to be one of simple appendicitis, and the limits of purely medical treatment, I confidently believe, have been reached. There has within the last few years been accumulated abundant evidence showing that amputation of the appendix, if undertaken early, is almost uniformly successful, while the conditions found on opening the abdomen have often been such that recovery could scarcely have been hoped for by expectant treatment. By early operation the only hope is given to cases where diffuse peritonitis has commenced, and even in cases where abscess only is commencing, the patient is saved the risk of this bursting into the peritoneum and so becoming generalised, while the tedious convalescence necessary when a large abscess cavity is drained is obviated. It may be urged that by resorting to laparotomy at this early stage cases will be operated on that would have recovered spontaneously. If due care is exercised this is not, I think, a contingency at all likely to arise, and we must remember that a carefully-done aseptic abdominal exploration, in skilled hands, is almost devoid of risk. To have explored a case which proved to be only simple appendicitis is, in my mind, a much less serious mistake than to allow a case to drift on into hopeless septic peritonitis for the want of timely interference. Speaking from my own limited experience of abdominal section generally, I have frequently had cause to regret that I had delayed operation too long, but never that I had opened an abdomen prematurely.

In cases of recurrent simple appendicitis, where the attacks are numerous, removal of the appendix may be called for. McBurney relates one in which he operated and removed an extensively diseased appendix from a patient who had twelve attacks in the previous twelve months. I recently saw two cases—one in a fourth attack, the other in a third—but as they both convalesced rapidly I did not advise operation in either.

ART. VIII.—*A Report on the Present Aspect of Dental Caries.*[a]

By A. W. W. BAKER, M.D., F.R.C.S.I., University Examiner in Dental Surgery, Univ. Dubl.

IN writing this communication I have chiefly consulted Professor Miller's work on Micro-organisms of the Human Mouth, who, by his original researches in this department of pathology, has done so much towards elucidating its problems.

In the first place, I think it will be interesting to glance, in the briefest manner possible, at some of the theories which from time to time have been proposed, in order to explain this, one of the most widespread of diseases.

The following list of theories, ranging from the time of Galen to the present day, show the very different views which have been held:—

1. Depraved juices accumulated in the teeth.
2. Disturbances of nutrition.
3. Inflammation.
4. Worms.
5. Putrefaction.
6. Chemical dissolution.
7. Parasites.
8. Diverse causes.
9. Electrolytic decomposition.
10. Chemico-parasitic influences.

I shall not attempt to criticise all the views here enumerated, but shall touch upon some of those which seem more important.

The inflammation theory seems to have had the support of Galen, and, to a certain extent, was favoured by John Hunter, who, having designated caries as mortification, said, "I am apt to suspect that during life there is some operation going on which produces a change in the diseased part."

In our own times a serious attempt to uphold this theory has been made by some American writers. However, without going fully into the subject, I may state that it is very generally believed that eburnitis, or inflammation of the dentine, does not occur, for the following reasons:—

1. None of the elements which appear in inflammation of other tissues of the body have been found in decayed dentine.

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[a] Read before the Section of Pathology in the Royal Academy of Medicine in Ireland, on Friday, May 13, 1892.

2. It is not possible to produce decay of a tooth by any of those mechanical or chemical irritants, which invariably produce inflammation in other tissues. And the operations for filling teeth, which are undertaken every day, show that it is possible to saw, cut, and file a tooth in all conceivable ways without any reaction as far as the dentine is concerned; such things, we know, are not possible in bone.

3. One of the most important reasons—that all the phenomena of caries may be observed in pulpless teeth, and in natural teeth, worn on plates, as artificial substitutes.

4. All the phenomena of caries may be produced artificially outside the mouth.

With regard to the putrefactive theory, it has been observed that an extracted tooth may be left almost an indefinite time without showing change in a putrefactive mixture; also, such a mixture generally gives an alkaline reaction, whereas an acid condition of the mixture is of primary importance in order to produce caries.

Up to recent times no theory of decay was more popular than the chemical; yet, although cavities may doubtless be produced in teeth by the action of an acid, as has been shown by Magitot, still, the differences presented by a decalcified tooth and one the subject of caries are at once apparent under the microscope.

The Dutch scientist, Leeuwenhoek, was probably the first to observe the presence of micro-organisms in the mouth (1683), while Ficinus, a Dresden physician, attributed dental decay to their action, and proposed for them the term *Denticolæ*.

However, the first really important observations with regard to the parasitic theory of decay were made by Leber and Rottenstein, who regarded the commencement of caries as a purely chemical process; but as soon as the dentine is superficially decalcified, the elements of the fungus, *Leptothrix buccalis*, penetrate the dentine tubules, enlarge them, and thereby facilitate the rapid penetration of the acids. The communication by Messrs. Milles and Underwood to the Dental Section of the International Medical Congress of 1881, in London, marked an epoch in the history of caries. They demonstrated the constant presence of micro-organisms in sections of decayed dentine, and the widening of the tubules produced by them. They rejected the purely chemical theory of decay, and stated their conviction that in the decay of the hard tooth-structures two factors have been always in operation:—1. The action of acids. 2. The action of germs.

Since 1881, mainly owing to the researches of Prof. Miller, our ideas on the process of decay in teeth have assumed a very definite form. We believe that it is a chemical process in which micro-organisms are largely concerned. In other words, the decay of teeth is due to the solution of the lime salts by an acid developed in the mouth, and once the enamel ceases to be an impenetrable barrier, micrococci and bacteria find their way into the dentinal tubes, flourish on the contents of the tubes, proliferate, and, by the production of liquefaction foci, break down the dentine in all directions, undermining the sounder portions of the enamel. The source of the acid, which is the primary cause of the mischief, naturally first attracts our attention. It is believed to be formed by the fermentation of the remains of food—principally the carbohydrates—in the mouth. The mouth being an incubator where all sorts of micro-organisms constantly flourish, the changes induced by them in the small portions of starchy foods and sugar which remain in and about the teeth, speedily develop acids, of which lactic acid is the chief. It is interesting to note that meat remaining in a cavity in a tooth does not become acid, but after the lapse of some hours gives an alkaline reaction. In order to demonstrate the above statements, I have made the following experiments, as suggested by Prof. Miller:—

1. In a sterilised test-tube I placed a mixture of bread, sugar, and saliva, and placed the tube in the brood-oven, at 37°C.; on being tested at the end of twenty-four hours it gave a strongly acid reaction, which was maintained for a week.

2. A tube similarly filled, before being placed in the incubator, was sterilised for half an hour in Koch's steam steriliser at 100°C. At the end of 24 hours it gave a neutral reaction, and was the same at the end of a week. This showed that the formation of the acid could be stopped by sterilisation. I then had further to determine how sterilisation of the bread and sugar alone and the saliva would affect the process; so in—

3. A sterilised tube I placed bread and sugar only, and kept this, as before, in the steamer at 100°C. for half an hour. Saliva was then added and the tube transferred to the incubator. At the end of the 24 hours there was a well-marked acid reaction, which it continued for a week. Sterilisation of the bread and sugar evidently did not effect the result; so in the fourth tube saliva

alone was placed and sterilised in the steamer, then bread and sugar added, and placed in the incubator. At the end of twenty-four hours this showed a very faint acid reaction, which it retained for a week. That this tube gave an acid reaction at all is, I think, due to the fact that bread nearly always has a slightly acid action; but there was a very marked difference between this tube and No. 3, in which the saliva had not been sterilised, in their effect on litmus paper. In stating that these several reactions continued for a week, I do not mean to convey more than that I tested these tubes daily for the first three days, then again at the end of the week, after which I discontinued the experiment.

From these experiments it would appear that we have to deal with an organised ferment in the saliva, which, acting on the carbo-hydrates, produces the acid.

It is not my intention to go into the question of the varieties of the micro-organisms to be met with in the mouth, as that, for many reasons, would require a separate communication, there being at present over 100 separate organisms which have been isolated from the mouth. All these do not of necessity occur in all mouths; however, there are six which are fairly constantly met with, viz.:—

Leptothrix innominata.
" buccalis maxima.
Spirillum sputigenum.
B. buccalis maximus.
Iodococcus vaginatus.
Spirochæte dentium.

We see, then, that the first step in the process of caries is the development of an acid by the action of the mouth, micro-organisms on the carbo-hydrates clinging about the teeth, and that this acid, conjoined with defective tooth-structure, brings about solution of the lime salts. The subsequent stage being the entry of micro-organisms into the decalcified dentine, it will be interesting to note what are the appearances which a tooth presents under these circumstances.

Macroscopic Appearances of Caries.—The enamel first shows loss of polish on the surface, so that a fine point will not glide easily over it. Then a white, chalky-looking spot appears, with loss of translucency, the tissue gradually breaking down into a soft cheesy powder, and, as the enamel only contains 3 per cent. of organic material, it is unable to cohere once decalcification takes place, but is soon washed away in the secretions of the mouth. In chronic cases the enamel margins of the cavity thus formed become pigmented a dark brown colour. As the process spreads to the dentine, we no longer find a soft, cheesy mass, but a tough, cartilaginous substance, due to the fact that dentine contains a much larger percentage of organic material, about 23 to 25 per cent., consequently it can retain its form for a longer period. However, as the process of decay advances, liquefaction foci form, the dentine disintegrates, and is washed away in the fluids of the mouth. The destructive process spreading more rapidly in the dentine through the tubules and their branches accounts for the undermining of the enamel which is so frequently observed. Caries, however, spreads more rapidly along the tubules than through their finer and more tortuous branches, consequently the disease advances in a pyramidal fashion, the apex of the cone being towards the pulp cavity. This is specially the case in teeth of good structure, whereas, in poorly developed teeth, and those containing interglobular spaces, the destructive process tends to spread more rapidly in a lateral direction.

In the cementum, owing to its bone-like structure, caries tends to the formation of wide, shallow cavities.

The cause of the transparent zone of dentine which is often seen surrounding the early stages of caries, which also may be observed in worn-down teeth, and in the roots of the teeth of old persons, is not quite a settled question, but is thought to be due to the consolidation of the dentine, so that it becomes more homogeneous. The various shades of colour which may be observed in a cavity in a tooth, are now believed to be due to chromogenic mouth bacteria—this pigmentation is chiefly to be observed in very chronic cases.

Under the microscope the changes which take place in the enamel are not very readily observed, owing to the enamel being washed away almost as fast as it is decalcified. Scrapings of this tissue reveal enamel prisms broken down, and mixed with masses of micro-organisms. The dentine, however, affords beautiful preparations in which the process can be well studied. Here the chief characteristics are the enlargement and varicose condition of the tubules, the thickening of Neumann's sheath, the invasion of the tubules with micro-organisms, and the subsequent formation of liquefaction foci.

The enlargement of the tubules is caused partly by the loss of intertubular substance, and partly by the dislodgment of intervening tubules, all the tubules not being uniformly enlarged. By the enlargement of the adjacent tubules, and solution of intervening basis substance, which is possibly caused by the peptonising action of the micro-organisms, liquefaction foci are formed, which are generally crowded with micro-organisms. By the formation of these caverns, and the fusion of adjacent caverns, the dentine is broken up, becomes porous, and is gradually destroyed. The tubules may be often seen in groups crowded with micro-organisms, while other tubules lying between these groups appear free from infection. We find frequently tubules invaded alone by cocci, others with rods, screw-forms, threads, or a mixed infection. It must not, however, from this be thought that we have special forms of decay due to these different varieties of micro-organisms, which may be distinguished one from the other. Up to the present no difference has been detected in the various specimens of caries; moreover, we meet frequently with tubules differently infected in the same specimen.

The thickening of Neumann's sheath, to which I have alluded, is best seen in cross sections, where the comparatively indestructible and thickened sheaths, standing out from the basis substance, produces the well-known pipe-stem appearance, the dentine looking as if built of clay pipe-stems. The enlargement of the tubules, by their mutual pressure, sometimes proceeds to such an extent as to produce five or six-sided figures.

All the appearances which I have described as occurring in caries under natural conditions, I have been able to produce artificially by placing sound teeth in a flask containing a mixture of bread, sugar, meat and saliva, the flask being kept in a brood-oven at 37° C.[a] Some of the teeth I cut in slices, others I covered with wax, except at one point, so as to produce cavities similar to what we meet in the mouth. At the end of a few days decalcification had so far advanced that I could penetrate the specimens with a needle, and at the end of fourteen days I was able to cut sections from the slices of teeth. The mixture in which the teeth were placed showed a strongly acid reaction by the end of the first day; it was occasionally renewed, and never at any time became putrid. Hanging drop preparations of the fluid in the flask showed various micro-organisms, many of which were motile. On the addition of iodine and iodide of potassium solution, some of the micro-organisms stained blue, but it did not interfere with their movements in the least. The only difference that I was able to detect between the sections of natural and artificial caries, was that the micro-organisms in the latter parted more readily with gentian violet stain when washed in alcohol.

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[a] This experiment was first successfully carried out by Prof. Miller, and has subsequently been repeated by other observers.

The existence in these specimens of large decalcified portions of dentine into which micro-organisms had not yet penetrated, seems to support Professor Miller's view as to the existence in natural caries of softened, but non-infected areas of dentine.

ART. IX.—*Notes of a Case of Ruptured Uterus.*[a] By P. J. BARRY, L.M. & L.R.C.P.I., L.R.C.S.I.; Senior Assistant Physician to the Coombe Lying-in Hospital, Dublin.

THE importance of the subject of rupture of the uterus is so generally admitted, that I venture to bring forward the notes of a case occurring in the extern practice of the Coombe Lying-in Hospital. I was called to the case by one of the students of the Hospital, and on my arrival obtained the following history:—Patient about thirty-five years of age, primipara; thirty-eight hours in labour, having strong labour pains from the onset to within two hours of my arrival. Liquor amnii had drained away early in labour. The patient presented a pinched, anxious appearance, with a cold clammy sweat and a quick weak pulse. On inspection abdomen presented nothing abnormal; carefully auscultating over uterus no fœtal heart could be detected, although heard some hours previously. By palpation a vertex could be made out at the brim of the pelvis. On making a digital examination, vagina hot and dry; os uteri about the size of a florin, thick and rigid. On passing my finger through the os uteri, I found a tear extending in an oblique direction for about four inches. There was no prolapse of intestine; promontory of sacrum easily felt, with vertex presenting at the brim of the pelvis. Conjugate diameter measured roughly about three inches; some sanguineous discharge from vagina. Having passed a catheter, and drawn off about a pint of dark-coloured urine, I then got an assistant to steady the uterus, keeping pressure in the axis of the brim of the pelvis; with a probe-pointed bistoury incised that portion between os uteri and tear. Applied forceps, and after making the most powerful traction that I could, failed to engage the head in the pelvis. By perforation I effected an easy delivery of the head, but experienced considerable difficulty with the shoulders. The placenta, which was morbidly adherent, was attached to the fundus, and slightly posteriorly. There was fair uterine contraction, and very little post-partum hæmorrhage. The patient had complete retention of urine, which condition persisted until the sixth day after delivery, when she regained perfect control over her bladder, the catheter having been passed twice daily for that time. Ten hours after delivery the student having charge of the case, making inquiries if the patient had passed water, was informed by her friends that the water was coming with the "discharge" during the night. But when I saw the patient a short time afterwards, I found the bladder distended, and drew off 20 ozs. of healthy-coloured urine (by measurement). The watery discharge coming with the lochia continued for two days. I look upon this watery discharge as peritoneal exudation, coming through the rent in the lower zone of the uterus.

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[a] Read before the Section of Obstetrics of the Royal Academy of Medicine in Ireland, on Friday, February 12, 1892. [For the discussion on this paper see Vol. XCIII., page 241.]

Treatment.—Ergot and liq. strychninæ for first three days, then sulphate of quinine in large doses to reduce temperature, with mist. diaphoret. Potassii brom. gr. 40 at night to procure sleep. Vagina douched out twice daily.

This patient visited me at the Dispensary, Nov. 24, 1891, three months after delivery. On examination the uterus was found normal in size and position; patient menstruating naturally without pain. No pelvic pain or backache; the os uteri quite small, scarcely admitting the point of the sound. And neither by digital examination, nor by the aid of the speculum, could I either feel or see a cicatrix corresponding to the tear.

Rupture of the uterus is one of the most appalling complications met with in midwifery practice, and one also difficult to foresee or control. Up to the beginning of the present century cases of ruptured uterus were practically abandoned as being beyond human aid. To Dr. Douglas belongs the credit of being one of the first in Great Britain to resort to artificial delivery, he having reported a successful case in 1784—active interference practically dates from that time. Many difficulties are encountered in the diagnosis of this complication, and quite a number are overlooked till after delivery. The majority are, however, easily recognised. The patient herself is conscious that something has gone wrong. She suffers from acute localised abdominal pain; her appearance is anxious; cessation of labour pains; recession of the presenting part; hæmorrhage, shock, a quick, weak pulse; a cold, clammy, sweaty dyspnœa. The death of the fœtus as a rule quickly ensues. The immediate result of the case depends on the amount of hæmorrhage; it is sometimes so great that the patient quickly dies before assistance can be rendered her. In a number of cases where the hæmorrhage is not excessive, or the shock profound, the prognosis, though grave, is much more favourable.

Dr. Trask, in his monograph published in the *American Journal of Medical Science*, 1848, records some very interesting cases:—

CASE XLVIII.—A stout young woman; rupture in severe labour, which lasted thirty hours; nearly four feet of intestine protruded through the rent, and sloughed off on the sixth day; fæces voided per vaginam for two years, when they took the natural channel. Eighteen months after this she conceived and had a living child.—Dr. M'Keever, *Lancet*, 1828.

CASE LXII.—Patient, aged forty-four, mother of five children; labour having commenced; whilst standing up became faint, and vomited; had a sense of laceration, and feeling as if there were two children in the abdomen; abdomen swelled; vomiting continued; breathing irregular; os undilated; two hours after rupture laparatomy; child extracted alive. Patient recovered in forty days.—Dr. Frank, 1825.

CASE LXX.—A woman of Toulouse had rupture during the pains of a very severe labour. Fœtus passed into the abdomen, and remained for twenty-five years. After her death the fœtus found invested in false membranes, and the rent by which it had escaped distinctly visible.—Bayle.

CASE LXXIII.—Rupture and escape of the fœtus into the abdomen; became pregnant a second time; extra-uterine at the end of seven years, during which time the fœtus was in the abdomen. At the end of twenty-one years she began to void the bones of both per vaginam; the discharge continued during eighteen years.—Underwood.

CASES LXXXII., LXXXIII.—The wife of a vine-dresser; rupture; laparatomy at the end of eighteen hours; the child dead; a gangrenous abscess formed in the hypogastric region, but she was at work in the fields in six weeks. At the end of nine years pregnant again, with rupture of the uterus; fœtus escaping into the abdomen; laparatomy at the end of two hours; fœtus gave signs of life for a half an hour after the operation. The woman subsequently had a child naturally.—M. Lambron.

Fourier records a case of rupture of the uterus, with escape of the fœtus and placenta into the abdominal cavity, on which he performed laparatomy on the fifth day. The patient was twenty-four years of age, the mother of two children. Six weeks before her expected labour she fell going down stairs. This, however, gave rise at the time, and for a few days afterwards, to only slight abdominal pains. Labour came on at term, and soon after the rupture of the membranes she felt a sudden and severe pain, and there was a cessation of labour pains. On careful examination four days afterwards, the abdomen presented two tumours. The one on the right was made up of the fœtus, whilst that on the left was the size of the uterus soon after delivery. An incision was made on the right side; fœtus, with membranes and placenta extracted; patient recovered. There was absence of hæmorrhage—only a slight gangrenous discharge shows after rupture. The presence of the fœtus and placenta in the cavity did not give rise to peritonitis.

In conclusion, I would urge the following points as to treatment:—

1. (*a*) If the fœtus has escaped into the abdomen; (*b*), if the hæmorrhage is severe, and cannot be controlled; (*c*), or if you have prolapse of intestine, abdominal section is indicated.

2. Deliver your patient as speedily as possible, and by that method which affords her the least risk:—(*a*) If the fœtus is still in utero os dilated, vertex presenting, deliver by forceps, or if the child is dead, by craniotomy; (*b*) breech presentations, if still in utero, deliver manually; (*c*) shoulder presentations, by embryotomy or abdominal section.

3. It is dangerous sometimes to wait for reaction, as shock and collapse may be due to hæmorrhage, which if not controlled will quickly dispose of your patient. Give stimulants by the mouth or rectum, ether hypodermically.

The fœtus dies soon after rupture, and, as a rule, does not enter into our consideration. But should we get signs of life, I would advocate abdominal section in preference to craniotomy. In the present advanced stage of abdominal surgery, and the good results achieved by laparotomists, I do not see why the mortality from this grave accident should not be considerably reduced.

I have brought forward this case first of all that it may be recorded; secondly, that it may elicit some remarks from the senior members of this Section whose field of observation is extensive, and whose experience must be relatively great, and not that I had myself anything new or original to impart.

ART. X.—*The March of Cholera in 1892, with Hints on Treatment.*[a] By J. W. MOORE, B.A., M.D. Univ. Dubl., F.R.C.P.I.; Diplomate in State Medicine, Univ. Dubl.; Physician to the Meath Hospital, Dublin; Fellow of the British Institute of Public Health.

FOR the third time within the last quarter of a century we are in view of the possible—nay, the probable—extension of epidemic cholera from the eastward to the British Islands. Happily, both in 1872 and in 1883, this country was spared the calamity of a visitation of this terrible disease, and it is devoutly to be hoped that on the present occasion also the threatened outbreak may be averted.

Past experiences of the march of cholera show that it has travelled to Europe from its home in Asia by three routes. First, "it has passed through the North-West Provinces of India into Afghanistan, and thence along the caravan routes by way of Balkh, Bokhara, and Khiva, it has reached the Russian province of Orenberg." Secondly, "it has spread along the trade lines from Southern India to Persia, and radiated thence south-westward to Syria and Egypt, and north-westward across Persia to the Caspian Sea, thence to Astrakhan at the mouth of the Volga, and up that river to Saratov and Kasan in European Russia (as in 1830)." Finally, "in 1865–66, it travelled by a new route, appearing first in Suez in relation with the pilgrim traffic, and extending thence through Egypt to the Mediterranean basin. Since 1865 the epidemic has always taken this route, and we have come to regard the Red Sea ports as the vulnerable point." The passages quoted are from the first of a comprehensive series of articles on the "March of Cholera" which have been appearing almost weekly in the *British Medical Journal* since July 9, 1892.

In the present year cholera has struck out a route which is partly new, but approaches most nearly to the first or northern route, which it followed in 1829 and in 1843–44. The modified route of 1892 has been determined by the building of the Transcaspian Railway, which runs from Samarkand, in Turkestan, touches the Persian frontier at Askabad, and strikes westward to the eastern shore of the Caspian Sea. The trading route then crosses the Caspian to the western seaport Baku, the great petroleum depôt, and the terminus of the Transcaucasian Railway, which runs by way of Tiflis into Southern Russia. There is also a large coasting trade from Baku northward to Astrakhan at the mouth of the Volga. Cholera has followed this latter route from Askabad to Saratov, which is 500 versts above the mouth of the Volga, and even as far north as Samara, Kasan, and Nijni Novgorod by the steamboat traffic up that great river. On July 15th, 59 persons were reported to have been attacked at Moscow.

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[a] Read in substance before the British Institute of Public Health, at the Annual Meeting in Dublin, on Wednesday, August 17, 1892. Revised to August 27, 1892.

The date at which cholera began to spread in Afghanistan is not known precisely, but it was undoubtedly prevalent in that country at the end of April or the beginning of May. It broke out on the Afghan-Persian frontier about the middle of May, shortly afterwards reaching Meshed, the principal town of North-Eastern Persia, on the road from Kandahar and Herat to Askabad. This last-named town, a station on the Transcaspian Railway, became infected at the end of May or beginning of June, and from it the epidemic spread with unparalleled rapidity along the railway eastward to Samarkand, westward to the Caspian. Baku, on the western shore of this great inland sea, was infected early in June, and so the cholera entered Europe.

From Baku the epidemic, as already stated, has spread northwards to Astrakhan and up the Volga; but, unfortunately, it has also spread westwards along the Transcaucasian Railway to Tiflis; thence it has "leaped" the Caucasus, following a trade route to Stavropol, Rostov and Azov, so that by July 15 the disease had become established on the shores of the Sea of Azov. This was a situation full of danger, foreshadowing an approaching infection of Southern Russia at large, of Odessa, Batoum, and other Black Sea Ports. In consequence, quarantine has been established by Bulgaria at Varna and Bourgas, by Turkey at the Black Sea mouth of the Bosphorus. Such precautions, we need hardly say, are quite unreliable.

Since the foregoing was written (August 16), the disquieting news has come to hand that Asiatic cholera has crossed the Russian frontier into Poland and Austro-Hungary, and that it has caused a considerable number of deaths in and about Lemberg, the capital of the province of Galicia. It is thought likely that the infection may have been imported into that town in rags—in which articles of commerce the Jewish inhabitants of the district do a large trade (*Brit. Med. Journal*, August 20, 1892, page 421).

Still more recent and still more alarming news is that an outbreak of true epidemic cholera has taken place at Hamburg, where 126 cases occurred on Monday, August 22, of which many terminated fatally. On Thursday, August 18, soon after the arrival at Grangemouth, on the Firth of Forth, Scotland, of a vessel from Hamburg, one of her crew was taken ill of Asiatic cholera, and died next day. There can be no doubt that at the time of writing cholera exists at Antwerp and at Havre. At the last-named port, since July 30, there have been 365 cases and 104 deaths. The city of Berlin is seriously threatened by way of Hamburg, and Gravesend has been actually infected from the same port.

In the towns of the lower Volga the epidemic is apparently now subsiding, having, as it were, burned itself out; but while it lasted it was very severe. Thus, in Astrakhan, on July 8th, the cases numbered 191, and the deaths 32; on July 12th, there were 27 deaths; on July 15th, 391 cases with 225 deaths; on July 16th, 269 cases with 218 deaths; on July 17th, 433 cases with 256 deaths. The rate of mortality shown by these figures, assuming them to be correct, is fearfully high. In Baku also the death-rate was estimated at 90 per cent. of the cases.

On August 5th, 9 cases and 4 deaths occurred in Moscow. On that day there were in the whole of Russia 6,076 cases and 2,901 deaths, while on August 7th the numbers as given officially had declined to 4,261 cases and 2,177 deaths. Estimates based on official statistics are to the effect that 25,000 persons had succumbed to cholera in the Russian Empire down to the end of June. On Monday, August 15th, there were in Petersberg 44 cases and 9 deaths. For the whole of Russia an official cholera return issued daily shows a total of about 7,600 cases and 3,900 deaths for Tuesday, August 16th. A later similar return gives 6,806 cases and 3,429 deaths for Saturday, August 20th.

Such is the history of the epidemic of 1892 as chronicled so far. Although the area of infection is no longer distant, there is reason to hope that strict sanitary precautions may check the westward progress of the outbreak. At all events, it behoves us to set our houses in order without a moment's delay, so that we may keep the foe at bay until the advancing season and the winter's frost will stay its ravages.

The Local Government Board for England issued a General Order in July prohibiting the importation of rags from France on the ground that "cases of an infectious disease, alleged to be cholera, now exist in certain parts of France." The expediency of this precautionary step will be understood when it is considered that some 15,000 tons of rags annually find their way from France to England, mainly to the ports of London, Hull, Goole, and Liverpool (*Brit. Med. Journ.*, July 16, 1892, page 136). The epidemic in France, however, is stated to be one of cholerine, or cholera nostras—not of Asiatic cholera. Another "General Order" has since been issued prohibiting the importation of rags from ports on the Black Sea, the Sea of Azov, and in Turkey in Asia.

Similar General Orders have been issued by the Local Government Board for Ireland. Copies of these "General Orders," which are respectively dated July 26, 1892, and August 17, 1892, have been courteously placed in my hands by Sir Francis MacCabe, F.R.C.P.I., the Medical Commissioner of the Board. I am also indebted to Sir Francis for a copy of Regulations for the prevention and treatment of cholera issued by the Local Government Board for Ireland to the Coast Guard and Officers of Customs, as well as to the various Sanitary Authorities in this country, under date December 6, 1890, together with an Order issued on July 26, 1892, as a supplement to the Order of 1890. This recent Order deals only with the littoral boundaries of certain Port Nuisance Authorities which have undergone alterations since the issue of the Order of 1890.

Both port and inland sanitary authorities and Medical Officers of Health should remember that cholera is a "filth disease," and that "our first line of defence" against imported sickness is the removal of all unwholesome conditions and the protection of the water supplies against pollution. If these essentials are attended to, there is no need for alarm, still less is there any occasion for panic.

The official *Reichsanzeiger* of July 28th, published at Berlin, in an article on cholera and its treatment, names as the best disinfecting substances "milk of lime," chlorinated lime, a solution of "potash soap" (soft soap), a solution of carbolic acid, steam sterilisation, and the boiling temperature. Exact directions for preparing the milk of lime are given as follows: 1 litre (35 ounces) of broken-up quicklime is mixed with 4 litres of water—that is to say, three-quarters of a litre of water are poured into a vessel and the quicklime is slaked in it. The rest of the water is then stirred in. The solution thus obtained may be kept in a well-closed vessel, which must be shaken before use. The solution of soft soap is made by dissolving 3 parts of the soap in 100 parts of water—that is, about a pound of soap in 17 litres of water. The solution is made more effective by the addition of 1 part in 20 of carbolic acid, stirred in while still hot. In order to disinfect by boiling, the articles to be disinfected must be boiled for half an hour in water, the water to be kept at boiling point and to cover the articles completely. If by mischance, disinfecting substances should not be at hand, it is recommended that such articles as cannot be burned should be exposed to the air, but protected from rain, in a warm, dry, and—if possible—sunny place for six days.

Under date July 24, 1883, the Royal College of Physicians of Ireland issued an important Memorandum on the then threatened approach of cholera. The question was discussed under three headings—(1.) Possible introduction of Cholera into the Port of Dublin; (2.) Management of a Cholera Epidemic in the City of Dublin; (3.) Suggestions for the use of the Public, as to the treatment of early or suspicious symptoms at seasons when cholera is threatened, or is epidemic.

Leaving the first two topics to the Sanitary Authorities, it may be advisable here to reprint the "Suggestions" of the College for the public benefit:—

"The College advise no alteration in the habits of living, where these have previously been moderate and regular. All excess should be carefully avoided, especially in the use of alcoholic drinks, as it is, of noted experience, the intemperate who most certainly fall victims to the most fatal type of cholera, as of other epidemic diseases.

"All food likely to cause indigestion or bowel complaint should be carefully avoided, particularly fruit in a large quantity or in an unripe, decayed, or unsound state; likewise, fish or meat when in the least tainted.

"Water should be used for drinking purposes only after being boiled; and, in consequence of the possibility of milk being diluted with infective water, it likewise should be boiled before use.

"Strict personal cleanliness should be practised, and the clothing should be adapted to the season and weather.

"All debilitating causes should be carefully avoided—such as excessive and long-continued fatigue and fasting; overcrowding; exposure to moist, stagnant air, or to air loaded with organic effluvia.

"During the prevalence of cholera any person affected by any of the following complaints should at once obtain medical advice—

1. Diarrhœa, or looseness of the bowels;
2. Vomiting or sickness of stomach;
3. Pains in the stomach or bowels;
4. Pains or cramps in the legs.

"While such aid is being obtained, the patient should be put to bed immediately, and warmth should be encouraged by the application of heat to the body and limbs. Also, in case of sickness of stomach a large mustard poultice should be applied over the abdomen. In the event of cramps ensuing, diligent rubbing of the limbs should be resorted to.

"Hot brandy punch should be administered in small and repeated doses, and the diet should be restricted to rice, milk flavoured with cinnamon and brandy, or arrow-root prepared with milk or port wine.

"Should relief not be shortly obtained, and the looseness of the bowels continue, ten grains of aromatic chalk powder with opium, or twenty drops of dilute sulphuric acid, with five drops of laudanum, should be administered in a tablespoonful of water, to which a little brandy may be added. This dose, which is intended for an adult, may be repeated every hour for three doses.

"The discharges from the bowels should be disinfected, and disposed of as quickly as possible. A wine-glassful of the following disinfectant mixture should be poured into the vessels used by the patient, viz.:—

"Common sulphate of iron (green copperas), one ounce;

"Carbolic acid, a quarter of an ounce;

"Water, twenty fluid ounces, or one imperial pint.

"Infected bedding and all articles of clothing worn by the sick should be destroyed by fire."

To the foregoing I would merely add that in both the preventive and the curative treatment of cholera during the present outbreak, perchloride of mercury is destined to play an all-important part. No more powerful antiseptic and disinfectant exists than a solution of this salt of the strength of from one in one thousand to one in two thousand parts of water. In using such a solution only porcelain or wooden vessels should be employed. Internally, perchloride of mercury may be given in the form of the official solution—in combination with 5 minim doses of that excellent pharmacopœial preparation, the tincture of chloroform and morphin.

Within the past few years I have seen good results follow the internal administration of frequent small doses ($\frac{1}{24}$th of a grain) of permanganate of potassium in solution in cases of autumnal diarrhœa and cholerine or cholera nostras. All analogy points to a like beneficial effect of the remedy in cholera morbus.

OPERATIVE PROCEDURES AT THE BASE OF THE BRAIN.

Dr. Ernest Laplace of Philadelphia read a paper on "Operative Procedures at the Base of the Brain" before the American Medical Association on June 9th, 1892. The following particulars and illustrative case are of interest:—"To open the anterior fossa the trephine must be applied immediately above the supra-orbital arch, at its junction with the temporal ridge. A set of malleable platinum-wire instruments, flat and wedge-shaped, are used for separation of the dura from the skull, and can be gently pushed over the rugosities of the skull, so as to reach all parts of the floor of the anterior fossa. For the exploration of the middle fossa the trephine is applied on a line extending from the middle of the zygomatic process to the external angular process of the frontal bone. The posterior fossa may be reached by applying a trephine immediately above the external occipital crest to the right or the left. This exposes the cerebellum below the lateral sinus. These operations were successfully performed on dogs. The chief advantage resulting from them will be the thorough application of scientific drainage in cerebral injuries, for the brain, being enclosed in a bony box, cannot expand when irritated or inflamed; hence the absolute necessity of a point of least resistance whence drainage can take place. Hæmorrhage is to be controlled with iodoform-gauze packing, or by gnawing off the edge of the bone and applying a hæmostatic forceps. Strychnin is to be relied upon chiefly to restore physiological equilibrium. Illustrative of the principles outlined, the case of a boy was reported who ran a fencing-foil under his left eye through the sphenoidal fissure into the brain. Consciousness was lost, and right hemiplegia and aphasia followed. Fifteen days after the accident the middle fossa of the brain was reached by trephining, and the platinum-wire instrument (a miniature egg-beater) insinuated as far as the cavernous groove, a teaspoonful of clotted blood being withdrawn. Improvement soon followed, and the case made a complete recovery. A remarkable feature was the amount of serous oozing from the trephine-opening, giving evidence of the great intracranial tension."

PART II.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

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The Chinese, their Present and Future: Medical, Political, and Social. By ROBERT COLTMAN, Jr., M.D., Surgeon-in-Charge of the Presbyterian Hospital and Dispensary at Teng-Chow-Foo; Consulting Physician of the American Southern Baptist Mission Society; Examiner in Surgery and Diseases of the Eye for the Shantung Medical Class; Consulting Physician to the English Baptist Missions, &c. Illustrated. Philadelphia and London: 1891. 8vo. Pp. 212.

"REQUEST of friends" has been too often pleaded in palliation of much worse faults than the publication of this pleasant volume. Those of Dr. Coltman's friends belonging to the profession who urged him to publish his experiences will be disappointed at the scanty space devoted to medical matters, which occupy only 38 pages out of 212. In fact, there is only one halfpenny worth of medical bread to a great deal of political and social sack. We do not say "an intolerable deal of sack," for the liquor is pleasant and profitable; but in these pages we have to deal with the medical chapters only. Of these there are but two; part, however, of the chapter on Dissipations is devoted to the hygienic aspect of the opium question, and the following passage gives Dr. Coltman's experiences and opinions:—

"I should say a large majority of the officials or mandarins use opium to a greater or less extent, some only using a drachm or less daily, while many consume two ounces or more. Those who use such large amounts soon become helplessly besotted and are unfit for any active duty. The wives of many of these men also use greater or less quantity of it, and show in their wasted yellow faces and sunken hollow eyes the evil effects of the dissipation. I have noticed the bad effects of opium upon those who had to undergo a surgical operation, as have also many of my professional brethren in China; and I was quite surprised to see a paper written by the colonial surgeon at Hong Kong Hospital and Jail, stating that a man placed in jail and deprived of all opium suffered no evil effects therefrom,

and that the opium eaters bore operations as well even when deprived of the drug as others."

The various missionary societies which compete for the conversion of the Chinese have established refuges for the cure of the opium habit, and although many of the "cures" are not permanent, some good is done. In these places the different methods of treatment are pursued, some doctors preferring immediate, others gradual withdrawal of the drug. Dr. Coltman has tried both, and has "come to believe that some patients who would die if suddenly deprived of the drug can be cured by its gradual withdrawal, while others, who are robust and not taking too heavy a daily dose, can be best treated by an entire withdrawal of the opium." Strychnin, quinine, capsicum, caffein, gentian, and iron are used as adjuncts. As might be expected, the older the patient the more difficult is the cure. One case is mentioned of a man of sixty-two, whose daily allowance was three drachms, and who was most anxious to be cured. He was gradually reduced to one drachm, but he would go no further. Three months later he took a drachm and a half, and no doubt he ultimately returned to his old allowance, or exceeded it.

The Eighth Chapter is devoted to the diseases prevalent in China.[a] Dyspepsia in its various forms is the chief. Exercise is impossible to the women in consequence of the artificial deformity of their feet. Both sexes of the labouring class—by far the largest, numerically—earn barely enough to supply the coarsest food, deficient in nutritive power, so that excessive quantities must be taken to support life. Hence "dilatation of the stomach and thinning of its walls, with consequent impairment of its function." The water-supply is bad. To these causes of digestive derangement is added malaria. The frequency with which stricture of the œsophagus is observed is very remarkable. It is probably due to syphilis. Variola attacks almost everyone sooner or later, and the disease appears to be endemic everywhere. The commonest nervous disease is suicidal melancholia, and occasionally epidemics of suicide occur. One summer, in a group of villages in Wei Hsien, two or three attempts were daily made—opium, arsenic, hanging, and phosphorus matches being the usual means selected. Dr. Coltman does not believe in demoniacal possession. Others do, as the following extract shows:—

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[a] **The author is careful to explain that his experience was confined to North China.**

"About five years ago I attended a conference at Chefoo, at the house of a missionary resident, and the above topic came in for the major part of the discussion. Being but just arrived in the country, I maintained a discreet silence, but great was my surprise to hear men of good standing arguing for the existence of demoniacal possession, and declaring that it occurred here in the East, because Satan, being so vigorously attacked in Western countries, had given up this form of persecution there, and was bestowing all his attention and energy in this portion of the globe. If I remember rightly, I was the only member of the medical profession present, and, after numerous wonderful cases had been recited by my brethren of the cloth, I was asked my professional opinion. I had a stronger opinion than I was willing to give at that time and place; so I merely said that the cases were very interesting and apparently authentic, but that, not having witnessed their peculiar symptoms, I could not pass a final opinion, and that some of them might have been mania, hysteria, &c. I went home from the meeting with the feeling that the Chinese were not the only people that were superstitious, and that I should like very much to see some such cases as those described. For several years this privilege was denied me, but one day a man—a stupid farmer—came to the dispensary and said his young wife was possessed by a devil and wanted some medicine. I told him I must see the case, and appointed the next day at 2 o'clock. He came promptly at the hour with his wife, aged about twenty-eight, his mother, and a male friend of the family. This friend was a curious, villainous-looking fellow—a striking contrast to the husband. I was told that when the spirit came up she would become unconscious, would tremble, sigh, and moan, and that she would remain in this condition for hours; that anger, fear, or any unpleasant emotions would bring the devil on. I asked if they had any way to invite the gentleman now, and they said they had, upon which the mother and husband stepped into the waiting-room, and the friend of the family commenced making a purring noise in his throat; immediately the poor woman cast her eyes around imploringly and became unconscious. The muscles of the throat and neck twitched violently, and her head fell upon her bosom. I felt her pulse; it was 76 and regular; breathing hurried and rather shallow. Was told by the friend that her attacks frequently came on in this way. On my asking how he knew in the first place how he could bring the devil up, he stuttered and stammered and took refuge in the waiting-room, upon which her mother and husband entered again. Sticking needles into her hands and arms being without avail to bring her out of this condition, I held a bottle of ammonia under her nostrils. The effect was magical; she quickly regained consciousness and soon appeared as she had been before the attack, which was simply an incomplete attack of hysterical convulsion. Since that day I have seen several other cases of reputed demoniacal possession, and without

exception they have been easily explained as the result of pathological conditions."

Leprosy is the subject of the Ninth Chapter, and the opinions to which Dr. Coltman's experience has brought him may be briefly stated. He has no sympathy with the scare at which, not long ago, some of us laughed consumedly, while it frighted a neighbouring isle from its propriety and common sense.

If leprosy were as easily communicable as the Prince of Wales was instructed to believe, China would have been long since depopulated. It does not spread appreciably there, though no attempt at isolation is made. The author's opinions, it should be said, are based upon thirty-five cases only. All these were males; and in 35,000 dispensary cases—ten per cent. of which were females—no female leper was included. A family taint was almost always traceable, and Dr. Coltman has no doubt of the hereditary transmission of leprosy, with the occasional omission of a generation. Many of the subjects were, or had been, syphilitic, and he believes "that the previous saturation of the body with syphilis affords a favourable soil for the development of the disease." He does not make the usual distinction between the anæsthetic and tubercular forms, which are, in fact, only stages. The former only is recognised in the native name, Ta Ma Feng—the Great Benumbing Disease.

Transactions of the Association of American Physicians. Sixth Session. Held at Washington, D.C., September 22, 23, 24, *&* 25, 1891. Volume VI. Philadelphia: 1891. 8vo. Pp. 319.

RIPPLES from the splash made by Koch's tuberculin continue even still to come to shore; and the first three of the twenty-three papers in this interesting collection are devoted to the subject. The volume contains the communications made to the Association at its Annual Session in September of last year. Dr. Kinnicutt (of St. Luke's Hospital, N.Y.) reports the results of treatment, by inoculation of tuberculin, of 42 cases, between December 10, 1891, and June 1, 1892. They were 8 cases for diagnosis, 13 of pulmonary tuberculosis (in seven of which there was laryngeal complication), 6 of lupus, 5 of joint tuberculosis, 4 of tuberculous adenitis, 2 of bone tuberculosis, 2 of tuberculous prostatitis, one case of tuberculous epididymitis, and one of rodent ulcer. Of the 13 cases of pulmonary tuberculosis, *five* were improved to a greater degree than Dr. Kinnicutt "had observed in a similar number in a corresponding stage of the disease, treated by other methods in hospital for a similar period of time." In four cases there was either no improvement or it was not general; in four there was deterioration in the patients' condition. Dr. Ernst, of Harvard University, laments—as do we all—"the too early announcement and application of laboratory results to clinical practice, and the inevitable destruction of confidence in future work of a similar character that will result from the failure of the hopes that were entertained of this material." In his 12 cases of internal tuberculosis treated with tuberculin, 7 were not relieved and 5 were relieved; there was no cure and no death. In 34 surgical cases, 12 were not relieved, 6 were relieved, 2 "much relieved," and two patients died; there were no cures. Dr. Ernst's experience leads him to the conclusions that tuberculin has no diagnostic value "at all applicable at present to clinical use;" that nothing more than a "possible temporary beneficial result" can be attributed to the treatment, and that he would not again employ the drug in practice. The third paper—a very brief one—by Dr. Osler, of Johns Hopkins University, records results of inoculations in 28 cases. No case was cured, five cases were decidedly benefited, nine were distinctly disimproved, and two of these died after leaving hospital. No death occurred during the actual treatment.

Dr. Fitz, of Harvard, read a paper on "Intestinal Perforation in Typhoid Fever." He justifies re-investigation of the subject by quoting two divergent statements made at a previous meeting of the Association: one physician saying that he had seen five cases of perforated bowel with recovery; another, that he had never seen a single case of recovery from an undoubted case of intestinal perforation. As to the frequency of occurrence of this complication in enteric fever, Schulz found that peritonitis from perforation was reported in 1·2 per cent. of 3,686 cases of enteric fever treated in the Hamburg hospitals in 1886–87. This ratio closely corresponds with Liebermeister's 1·3 per cent. of over 2,000 cases in Bâle between 1865 and 1872. As a cause of death, Hölscher found it to occur in 6 per cent. of 2,000 fatal cases. Murchison collected 1,721 fatal cases, and placed the percentage due to perforation at 11·38. Dr. Fitz has collected 4,680 cases, and finds the proportion 6·58 per cent. Perforation is more common in males than in females—as 71 to 29 in 444 cases. Of 167 cases the ileum was the seat of perforation in 81·4 per cent., the large intestine in 12·9. As to the question of recovery from this accident, it is one very difficult of decision, because perforation may occur without pathognomonic symptoms—and symptoms undistinguishable from those of perforation may occur when there is no perforation—so that recovery after these is no proof of recovery after perforation. Most cases in which recovery has followed symptoms which seem to indicate this lesion are, Dr. Fitz maintains, such as most closely resemble cases of appendicitis. "Hence the prognosis of apparent perforation of the bowel in typhoid fever is to be regarded as the more favourable the more closely the symptoms and course resemble those of an appendicitis."

The abdomen has been opened ten times for the cure of perforating ulcer in the early stage, with *one* recovery, the details of which are not recorded. The evacuation of a peritoneal abscess some time after perforation had occurred has been a more successful operation, but few instances are recorded. Dr. Fitz has collected a considerable number of cases in which recovery has followed resolution or spontaneous evacuation—17 of the former and 9 of the latter. It must be noted, however, that these were cases of peritonitis occurring in enteric fever, not demonstrably cases of intestinal perforation.

We cannot omit brief notice of Dr. John S. Billings' account of the Library of the Surgeon-General's Office and the Index-Catalogue. The library contained in September last 102,000 volumes and 152,000 pamphlets, "counting as pamphlets all octavos and smaller sizes having less than 100 pages, and all quartos having less than 50 pages." In five years (1886–91) 25,237 volumes and 55,900 pamphlets were added to it. A considerable proportion of the contents is periodical literature, which is much more abundant in the United States than elsewhere:—

> "For in 1890 it produced about 250 volumes of medical periodicals, 60 volumes of new medical books, 20 volumes of later editions, and 28 volumes of reprints of English books and transactions; while France produced about 160 volumes of medical periodicals, 250 volumes of new medical books, 20 volumes of later editions, and 15 volumes of transactions; Great Britain about 85 volumes of periodicals, 140 new books, 45 volumes of later editions, and 12 volumes of transactions; and Germany about 175 volumes of medical periodicals, 175 volumes of new books, 80 volumes

of later editions, and a dozen volumes of transactions. All this is exclusive of pamphlets."

Of the "Index-Catalogue" twelve volumes have been printed, containing "137,578 author titles covering 66,855 volumes and 120,000 pamphlets, 522,092 subject titles covering 128,284 titles of books and pamphlets and 393,808 articles in journals and transactions." We cordially concur with Dr. Gairdner of Glasgow, who declared at the meeting that "there is no work of the present generation that strikes me more with the idea of the stupendous, and also as being animated throughout by the qualities amounting to genius than that magnificent catalogue," which we owe to Dr. Billings.

A few words of notice, in conclusion, of two specimens of hair, exhibited by Dr. Prentiss of Washington. These were reported to have been *blackened* by the internal use of jaborandi in one, and pilocarpin in the other, case. An old lady, suffering from interstitial nephritis with itching of the skin, was treated with fluid extract of jaborandi for a year, with relief. In eight or nine months her eyebrows became black, and then the hair of the scalp in patches, and new hair was growing all over the head. She died before the process was complete. The other case was a young lady of twenty-five, who was treated by hypodermic injections of pilocarpin—one-sixth of a grain twice or thrice weekly—for uræmia. Her hair, light blonde in colour, became distinctly brown in two weeks, and black in six. Ten years afterwards her hair remained black.

How to Feel the Pulse, and What to Feel in it. By WILLIAM EWART, M.D. Cantab., F.R.C.P.; Physician to St. George's Hospital; Physician to the Belgrave Hospital for Children, &c. With Twelve Illustrations. London: Baillière, Tindall, & Cox. 1892. Pp. 112.

THIS little book describes at great length how to feel the pulse; it tells us how to hold our hand and in what positions the patient's hand may be; it tells us how the pulse is counted, and that a watch which marks seconds is necessary; it enumerates the arteries in which the pulse may be felt. We have chapters on Capillary Pulsation, on Veinous Pulsation, and on Pulse-tension. The sphygmograph and all problems connected with the pulse waves are omitted. Nothing clinical, nothing advanced, is introduced.

The author in his preface states that the book is intended for "the young student." To the young student therefore we recommend this work, combining with our recommendation the hope that he may before long be able to partake of rather stronger mental and intellectual food.

Cardiac Outlines for Clinical Clerks and Practitioners, and First Principles in the Physical Examination of the Heart for the Beginner. By WILLIAM EWART, M.D. Cantab., F.R.C.P.; Physician to St. George's Hospital, &c. With Sixty-two Illustrations. London: Baillière, Tindall, & Cox. 1892. Pp. 165.

THIS little book is a treatise on the physical examination of the heart by means of percussion and auscultation. The surface markings on the chest wall are first described, and then the position of the various parts of the heart. All this is copiously illustrated, many of the figures being most instructive and showing in an admirable manner the relations which the valves and orifices bear to one another and to the surface. Palpation and percussion of the heart are next fully described: Sansom's pleximeter is recommended as giving more exact results than the ordinary mode of percussion on a finger of the left hand. The limits of cardiac dulness are very fully illustrated. Auscultation is also described. The last part of the book treats of the physical signs observed in valvular disease, pericarditis, and other cardiac affections.

The chief feature of this work consists in the illustrations, 62 in number. Almost every one of these is of considerable size, occupying an entire page, and all are exceedingly clear and distinct. No one can study the book without having his ideas as to cardiac topography refreshed.

A Treatise on the Diseases of Infancy and Childhood. By J. LEWIS SMITH, M.D.; Clinical Professor of Diseases of Children, Belleview Hospital Medical College; Physician to the Charity Hospital; Physician to the New York Foundling Asylum, &c. Seventh Edition, thoroughly revised. With Fifty-one Illustrations. London: H. K. Lewis. 1890.

THE sixth edition of this well-known and justly-esteemed work was issued in 1886. Since that time so many additions have been made to our knowledge of the ætiology, nature, and treatment of the diseases of children, that it became necessary thoroughly to revise this work; and the revision has been so complete that the volume before us is virtually a new book. Old articles have been re-written, and several completely new articles are introduced, of which we may specially mention the chapters on Typhlitis and Appendicitis, Icterus, Sepsis, Conjunctivitis, and Epilepsy. Dr. Joseph O'Dwyer has written a most practical and instructive chapter on Intubation of the Larynx, on which procedure he is the chief authority.

A feature in this work is the prominence given to Diseases of the New-born, Malformation, Injuries received during Parturition, Icterus, Sepsis, Melæna, and Tetanus Neonatorum. These affections form a distinct section of the book, and occupy 82 pages. The directions as to the artificial feeding of children are full and practical.

We have formed a very high opinion of this book, and can recommend it as a reliable and standard work on children's diseases.

The Extra Pharmacopœia. By WILLIAM MARTINDALE, F.C.S., late Examiner of the Pharmaceutical Society, and late Teacher of Pharmacy and Demonstrator of Materia Medica at University College. Medical References and Therapeutic Index of Diseases and Symptoms by W. WYNN WESTCOTT, M.B. Lond., Deputy-Coroner for Central Middlesex. Seventh Edition. London: H. K. Lewis. 1892. Crown 8vo. Pp. 524.

AT this time of day we need do little more than call attention to the appearance of another—the seventh—edition of this invaluable book of reference, the reputation of which has long since been established.

In the two years which have elapsed since the publication of the sixth edition, Pharmacology has continued to follow in the footsteps of Modern Chemistry in utilising for the most part the derivatives of coal-tar and various alcohols. A notable exception to this rule is the attempt—so far only partially successful—to make use of pure morbific cultures as antidotes in certain microparasitic diseases—for example, the treatment of tuberculosis by hypodermic injections of the prepared lymphs "tuberculin" and "tuberculocidin." For the purpose also of ridding the animal organism of the infective bacilli of tubercle, such supposed chemical antidotes as cantharidate of potassium, chloride of zinc, eucalyptol, creasote, guaiacol, and benzosol have been of late employed. In this connection, Liebreich's solution of cantharidate of potassium is described at page 101.

A number of new synthetic compounds have been brought into use. Of these, many have had an ephemeral reputation, while others have become firmly established. Needless to say that the authors give the evidence for and against the several novelties in a clear and succinct manner. "Salophen" has been introduced as a substitute for salol. In urinary diseases, piperazin—or as it is fancifully called "synthetic spermine"!—has been used as a solvent for urates and uric acid calculi. We already have, of course, as preparations of this remedy granular effervescent piperazin and aërated piperazin water.

Nearly all the recent chemical, pharmaceutical, and therapeutical researches are carefully annotated and summarised in the pages of this wonderful little book, which is now simply indispensable to the busy medical practitioner. We notice a very few omissions. For example, no mention is made, under the heading "Calcium Chloride," of the value of this preparation as a styptic. In our treatment of pulmonary consumption we have repeatedly had occasion to observe the power of chloride of calcium as a preventive of hæmorrhage, and in the *British Medical Journal* for Dec. 19, 1891, will be found a very suggestive paper by Dr. A. E. Wright, of Wimbledon, Surrey, on the administration of chloride of calcium whenever it is desirable to increase the coagulability of the blood.

Lead Poisoning in its Acute and Chronic Forms, The Gulstonian Lectures, delivered in the Royal College of Physicians, March, 1891. By THOMAS OLIVER, M.A., M.D., F.R.C.P.; Professor of Physiology, University of Durham; Physician to the Royal Infirmary, Newcastle-upon-Tyne. Edinburgh and London: Young J. Pentland. 1891. Pp. 121.

THESE Lectures form an excellent monograph upon some of the forms of lead poisoning. Dr. Oliver has had an unusually extensive experience of this disease. There are in the neighbourhood of Newcastle-upon-Tyne several large white lead manufactories, which have supplied him with a number of patients, and, as well as this, there are in every town a considerable number of persons more or less affected by lead. He has evidently studied the subject very carefully, and is quite familiar with the views of other observers.

The first lecture relates to the various ways in which lead becomes introduced into the system. Dr. Oliver believes that women are much more susceptible to lead than men are. "Not only is the female more susceptible, but she is so at an earlier age than the male, and is more likely to suffer severely, and from such nervous accidents as epilepsy. I find that the ages at which the human female is most susceptible is from eighteen to twenty-three, and that in men from forty-one to forty-eight; and the interesting point in regard to exposure to lead is that while young women suffer readily from saturnine poisoning, recovering quickly from colic, only to be more readily and severely affected on again exposing themselves, men may go on working for years, ten or twenty, having only one or two attacks of colic, and then after a very lengthened period of service may still fall victims either to lead paralysis, or die from the effects of a kidney lesion due to the poison." It will be seen from this extract that Dr. Oliver's English is not always quite grammatical.

The second lecture describes the symptoms of the disease. Some of the descriptions are very full and vivid—*e.g.*, "A case of acute encephalopathy. A young healthy girl of an age ranging from seventeen to twenty-four, well developed and lively, and with normal menstruation, seeks employment in a lead factory, where she is placed either in the 'white beds' or in the 'stores.' In whatever part of the factory she is employed she is brought into direct contact with powdered white lead. Here, after a varying degree of exposure, she becomes anæmic. It may be that her gums show a very faint blue line, or perchance her teeth and gums are perfectly sound and no blue line is discernible. Coincident with the anæmia she has been getting thinner, but so gradually as scarcely to impress itself on either herself or friends. Sickness is now complained of, but there is neither constipation nor abdominal pain, or if these have been experienced the condition has been long passed through, and was at best but slight. Her menstruation is either scanty or profuse, and, as a consequence, headaches growing in intensity are developed. These are frequently attended by obscuration of vision or temporary blindness. Such a girl passes into what appears to her friends and medical adviser as ordinary hysteria. This gradually deepens, or without warning, and more often without than with anæmia, she is suddenly seized with a convulsion, beginning in the face, then involving the arm, next the leg of the same side of the body, until the convulsion, violent and purely epileptiform in character, becomes universal. This is attended by loss of consciousness, out of which she passes into a series of convulsions, gradually increasing in severity, in one of which she dies. Or consciousness, partial or perfect, is regained, either it may be for a few minutes or hours, or days, during which violent headache is complained of, or she is delirious and excited as in acute mania, or dull and sullen as in melancholia, and requires to be aroused when she is found wandering, and her speech is somewhat imperfect. Without further warning, save the pulse, which had become soft and with nearly the normal number of beats, all at once becomes slow and hard, she is suddenly seized with another convulsion in which she dies, or passes into a state of coma from which she never rallies; the urine, previously scanty but healthy, ceasing in the last few hours of life to be secreted. In another case the convulsions gradually subside, the headache disappears, and the patient recovers, only to find that she has completely lost her eyesight—a loss that may be temporary or permanent."

Considerable attention is paid to the blue line in the gums. There are several coloured illustrations of it; also one of a microscopic section through the edge of the gum showing the lead deposited in the tissues. There are other well-coloured and instructive plates of the spinal cord, kidneys, fundus of eye (neuritis and atrophy), &c. With regard to the primary seat of lead paralysis, Dr. Oliver advocates a central origin for the primary lesion, but is forced to admit, from the vulnerability of all parts of the nervous system, that the lesion might be peripheral under certain circumstances.

Lecture III. treats of the various channels by which lead enters the system. Details are given of a number of experiments made by the author to test the solubility of lead carbonate in the various digestive secretions. The changes noticed in the liver and kidneys and in the blood are discussed: also the excretion of urea and uric acid.

Finally, Dr. Oliver describes the treatment of this class of disease. This section is by far the poorest and most unsatisfactory part of the book. The whole subject of treatment is confined within four pages, and no details are given, and there is no description of the progress of interesting cases under treatment. The description of the means of relieving lead paralysis occupies only eight lines. This utter inadequacy of detail as to management is the chief fault in the work before us, and very largely takes away from the value the book would otherwise have possessed.

RECENT WORKS ON INTESTINAL SURGERY.

1. *Colotomy, Inguinal, Lumbar, and Transverse, for Cancer or Stricture, with Ulceration of the Large Intestine.* By HERBERT W. ALLINGHAM, F.R.C.S.; Surgeon to the Great Northern Hospital, &c. London: Baillière, Tindall & Cox. 1892. 8vo. Pp. 199.
2. *Diseases of the Rectum and Anus.* By ALFRED COOPER, F.R.C.S., &c., and F. SWINFORD EDWARDS, F.R.C.S., &c., &c. Second Edition. Illustrated and much enlarged. London: J. & A. Churchill. 1892. 8vo. Pp. 324.

1. IN this work Mr. Allingham has gathered into a whole the various scattered papers he has written on this subject for years past and published in the medical journals, forming a record which perhaps is unique in its experience, and is a valuable contribution to this branch of surgery. Mr. Allingham's views are so well known that we need not recapitulate them here; his preference for inguinal over lumbar colotomy, his insistence on the necessity for forming a good spur, and his mode of fixing the gut so as to obtain this result—are known to all surgeons. The author deals first, in an interesting chapter, with the conditions necessitating colotomy and the choice of the operation, followed by a chapter (rather a scant and unnecessary one) dealing with the anatomy of the various forms of colotomy. The next chapter deals fully with the operation of inguinal colotomy, and is rendered clear by some useful diagrams and the records of numerous cases. Chapter V. deals with what the author terms "the supplementary operation"—in other words, the method adopted to prevent the occurrence of that most troublesome complication, *procidentia coli.* The various points in the left-sided operation are then fully discussed before we come to a chapter dealing with right inguinal colotomy, which is mainly a full record of four cases. The left and right lumbar operations are next considered, but to them the space devoted is much less, the author wisely confining himself to his own experiences of each. Transverse colotomy is briefly described; and

with chapters on the after-treatment of cases and a few remaining points, the boók closes. Altogether the book is a valuable record of personal experience, but there are some evidences of hurry in its compilation, and inaccuracies that we hope to see removed in a second edition. It is curious to find in a book written by a specialist the name of one of the pioneers in this branch of surgery persistently misspelt—Madeling for Madelung. Again, the account given of Mr. Cripps' operation (p. 46) is not correct. The book is, as we have said, largely a record of cases, and perhaps we may be allowed to suggest to the author the omission in future of such remarks as—"the time occupied was twenty minutes," or "left inguinal colotomy . . . was performed in twelve minutes." Such flourishes savour of the stage-craft of the charlatan, and are unworthy of a surgeon of Mr. Allingham's eminence. We would fain see them eliminated, but cannot pass them over without comment. Quite recently a distinguished surgeon has given utterance to these words, which we commend to the earnest consideration of all surgeons:—"It is no longer a point of primary importance that a stone should be extracted in a few seconds, or a limb removed in a limited number of minutes. A pupil with a watch in his hand no longer stands beside the struggling and shrieking patient to take 'the time.' The days of the so-called 'brilliant' surgeon are over . . . when a surgeon would 'whip off' a leg or remove a stone with something of the fever and *éclat* of a conjurer who draws an unexpected rabbit from his sleeve."

2. In producing this second edition of his work on diseases of the rectum and anus, Mr. Cooper has taken into collaboration his colleague at St. Mark's, Mr. Swinford Edwards. The book has been thoroughly revised, enlarged, and written up to date; and in its new dress, as regards type, paper, and illustrations, leaves nothing to be desired. Some of the plates are remarkably good—notably the "photo-prints" of *simple* and *malignant adenoma of the rectum*, and of *epithelioma of the anus*, which are beyond question the best reproductions of micro-photographs we have yet seen. The chapter on "Electricity in Rectal Surgery" has been wisely omitted, as the authors, like all other surgeons who have had any experience of it, have come to the conclusion that it is absolutely worthless, or as they more mildly put it—"we find in practice but little if any use for this remedy. Most of the conditions to which it has been applied can be better and more readily treated by other means." An excellent chapter deals with the subject of fistula.

We are glad to find the amount of space devoted to "horse-shoe" fistula—a much-neglected variety of the disease—and the lucid and complete account of its mode of development and the operation required for its cure, far beyond that in any work with which we are acquainted. We cannot too much emphasise the authors' remarks in this connection:—"In operating upon a horse-shoe fistula it is, first of all, most necessary to recognise it—*i.e.*, to understand its conformation, for a casual observer might think that he had two separate fistulæ to deal with, and operate accordingly. Even were he to recognise that he was dealing with a horse-shoe fistula, if he followed the usual plan, he would slit up first one sinus and then the other, thus dividing the sphincter in two places and obliquely through its fibres, proceedings generally fraught with dire consequences to the patient" (p. 119).

An interesting chapter deals with stricture of the rectum—a most distressful and often intractable complaint. After giving it a fair trial the authors are agreed that but little benefit can be hoped for from treatment by electrolysis, and state that "the best method of dealing with those strictures which are not amenable to dilatation is by COMPLETE LONGITUDINAL DIVISION, involving the stricture, the portion of the rectum below it, and the internal and external sphincter." In this opinion most surgeons of experience will acquiesce. Space will not permit us to quote further the many interesting passages we had marked, but we can most cordially recommend the book to the general practitioner and to the specialist in this department of surgery, with the full assurance that the authors have produced in this edition a work which is thoroughly abreast of the time, and one of the very best with which we are acquainted in its own special branch. It is well and lucidly written, and many of the cases quoted in illustration are most interesting and suggestive. We may add that the book has a capital index, and that the typography will commend itself to the most delicate sight.

International Medical Magazine: A Monthly, devoted to Medical and Surgical Science. Edited by JUDSON DALAND, M.D. Philadelphia: J. B. Lippincott Company.

WE have before us the first four numbers of this new monthly periodical. Each number contains original communications, clinical lectures, reviews, and a review of the various branches of medicine. The matter contained in it has been very good. Most of the original work is by American authors, but British and Continental writers have also contributed papers. The papers are rather freely illustrated by woodcuts or photographs. The printing and paper leave nothing to be desired.

We can recommend this journal as a very good monthly medical magazine.

International Clinics: A Quarterly of Clinical Lectures by Professors and Lecturers in the Leading Medical Colleges of the United States, Great Britain, and Canada. Edited by JOHN M. KEATING, M.D., Philadelphia; J. P. CROZIER GRIFFITH, M.D., Philadelphia; J. MITCHELL BRUCE, M.D., London; and D. W. FINLAY, M.D., London. Edinburgh and London: Young J. Pentland. 1892.

WE have before us Volumes III. and IV. of this remarkable quarterly periodical. Each volume contains about 42 lectures, the whole amounting to nearly 400 pages. The subjects are grouped under the headings Medicine, Surgery, Diseases of Women, Neurology, Diseases of the Eye, Ear, Throat, and Skin. Most of the writers are American; but among the British contributors we notice the names of Gairdner, "Intestinal Obstruction;" Percy Kidd, "Tubercle Bacilli;" Goodhart, "Tubercular Peritonitis;" Churton, Champneys, Oliver, Bristowe, "Hydronephrosis;" Duckworth, "Pneumonia;" and others. Among the American writers we find such well-known names as H. C. Wood, Weir Mitchell, Piffard, Hammond, W. W. Keen, and Da Costa.

The lectures, of course, vary in merit. Many reach a very high standard. The work is very fully illustrated, and the printing and binding are such as we have become accustomed to expect from the firm of Young J. Pentland, and that is saying a good deal.

While we recognise the many excellencies of these volumes, we, for our own part, are inclined to wonder whether it is worth while to publish in such an elaborate and costly manner a new medical periodical—for these "International Clinics" form merely a new high-class medical periodical, as good as, but no better than, several excellent journals which have existed for some time past. It may be that the medical public will prefer to get its periodicals ready bound in book form, in which case this series will enjoy much popularity. In any case the editors are to be congratulated on the excellence of the contents of the two volumes before us.

Medical Communications of the Massachusetts Medical Society. Vol. XV. No. II. 1891. Boston: David Clapp & Son. 1891. 8vo. Pp. 302.

MORE than 100 pages of this number are occupied by Dr. Edward Cowles' Shattuck Lecture on *Neurasthenia and its Mental Symptoms.* The founder of the Lecture enjoined special attention to the diseases of the inhabitants of the Commonwealth of Massachusetts, and in New England, the lecturer tells us, "there is probably no disease more prevalent than neurasthenia." Beard held that it is mainly an American disease, due to modern civilisation, and almost endemic in the northern and eastern States. Dr. Cowles' lecture is very elaborate and complete. Dr. Thorndyke's "Notes on the Disturbances which may follow Instrumentation upon the Male Urethra and Bladder" treat an important subject briefly but well. Dr. Willard H. Pierce's paper on "Typhoid Fever" offers some points worthy of special notice. Burlington, in Vermont, is built on a hill-slope, and admirably drained into Lake Champlain; the sewage issuing within less than half a mile of the spot from which water is pumped for the supply of the town. For years the inhabitants drank their special mixture, without the appearance of enteric fever; but in the summer of 1844 a case was imported, and an epidemic swept the city. The author's inference is that "the disease is caused by a specific germ, but that this germ is not capable of producing the fever when first derived from the typhoid patient, but must undergo a change resulting from its combination with some substance found in decomposing organic matter." Dr. Pierce's experience of enteric fever leads him to the conclusion that the cases which differ from the "typical" disease, as laid down in the text-books, are more numerous than those that agree with it. "Either," he says, "typhoid fever has of late grown more mild, and its symptoms more often depart from the supposed typical course, or else we are dealing with a different disease." Delirium, tympanites, iliac gurgling, and tenderness are frequently absent.

The author's rules for the exhibition of alcoholic stimulants in enteric fever will remind some of us of old "Meath" days, when as yet "typhoid" fever was not supposed to exist. "To be of value, they should not be given until the advanced stage of the disease is reached, and only then when the irregular, wiry, or dicrotic pulse indicates the impending failure of the heart. Stimulants should then be used freely and fearlessly."

Bath and her Thermal Waters. A scientific and rational view of their use in disease, with a sketch of the History of Bath, a chapter on Massage, and a description of the Baths. By SAMUEL CRADDOCK, M.R.C.S. Bath. 1889. Pp. 76.

THIS is one of those handbooks which are so common at "Baths," written by a local medical man, and published at the office of the local newspaper. The only point of medical interest is the account of a series of analyses of urine before and after immersion in a hot bath. In one series of experiments the amount of uric acid in the urine passed during the twenty-four hours after twenty minutes' immersion averaged 3·2 grs. more than in the previous twenty-four hours. In another series of experiments performed in summer, the average increase was 1·41 grs. These results, if constant, would justify us in sending cases of chronic gout to Bath for treatment in the luxurious baths erected by the Corporation.

Alpine Winter in its Medical Aspects. By A. TUCKER WISE, M.D. (Brux.); L.R.C.P.; M.R.C.S. Fifth Edition. Pp. 114. London: J. & A. Churchill. 1892.

A WELL-WRITTEN, readable account of winter life in high altitudes, with its advantages and disadvantages. The difficulty of finding hotel sanitoria in England is pointed out as one of the reasons why treatment of early phthisical cases in the south of England is so unsatisfactory:—

> "In addition to the rain and wind of the British Isles, there appears to be also either a total ignorance or disregard of the requirements of health visitors. There are scarcely any shelters provided—no glass-covered galleries, verandahs, nor convenience for taking the air in wet weather. Indoors, the temperature maintained by stoves and open fires is most uncertain and partial. If any ventilation is available it is by Tobin's tubes, or apertures communicating direct with the exterior, quite unsuitable for a windy climate. I have seen "through" ventilation

adopted for corridors—an excellent system in hot weather, but unbearable and perilous in our English winter. These drawbacks alone drive hundreds of English people to seek change in other countries in spite of the disadvantages entailed by travel or absence from home and friends.

"I may remark here that after more than ten years' experience of the treatment of phthisis in the Alps, I hold the opinion that continuous medical supervision of the invalid in a small hotel sanitorium is one of the best means to be selected for the cure of consumption in its early stages, or the prolongation of life in more advanced phases of the disease, and for training the patient in ulterior self-guardianship."

Various high stations are carefully described, peculiarities as regards exposure to wind, sun &c., being clearly noted. Other chapters deal with important general considerations, such as the effects of cold, drawbacks to wintering so high up, and Swiss diet. A number of useful tables aud directions to travellers end the book.

On the whole, a careful perusal of the book leads us to consider that wintering at high altitudes is a hopeful method of treatment for selected cases.

On Contractions of the Fingers and on "Hammer-Toe." By WILLIAM ADAMS, F.R.C.S. Eng., &c. With eight plates and thirty-one wood engravings. Second Edition. London: J. & A. Churchill. 1892. 8vo. Pp. 154.

THIS is a reprint, with additions, of Mr. Adams' well-known work, the first edition of which has been for some time out of print. To the essay dealing with Dupuytren's contraction there is added as an appendix a paper read before the Medical Society in 1890, on some "Further Observations on the Treatment of Dupuytren's Finger-Contraction," in which the latest results of the author's methods are embodied, together with an abstract of some of the most recent literature, both here and in America, dealing with this subject. This is a most valuable paper; but its value could be largely enhanced if the surgical records of France and Germany had been gleaned with equal diligence. To this edition has also been added an essay on the condition not altogether appropriately termed "Hammer-toe," its pathology and treatment, and its association with congenital contraction of the fingers. The fourth essay deals at length with the treatment of this condition by the subcutaneous division of the lateral ligaments; and a fifth on the

"Obliteration of Depressed Cicatrices after Glandular Abscesses by a Subcutaneous Operation" concludes the work. Mr. Adams' methods are so well known that it is needless to waste space in describing them, and having stood the "time-test" our recommendation or censure would be equally ineffectual. The work is illustrated with numerous and excellent plates.

Coca and Cocaine: their History, Medical and Economic Uses, and Medicinal Preparations. By WILLIAM MARTINDALE, F.C.S. Second Edition. London: H. K. Lewis. 1892. Pp. 76.

THE second edition of this brochure has been brought down to date, and printed in large type; otherwise it remains as it was before, a description of coca and its alkaloid cocaïn supplementary to the short description in the Extra Pharmacopœia. The historical part is the most interesting, the rest shows the "scissors and paste" too clearly, and the want of an index is felt. Curiously enough, the author does not give any opinion as to the danger or otherwise of using cocaïn hypodermatically.

The Student's Handbook of Surgical Operations. By FREDERICK TREVES, F.R.C.S.; Surgeon to, and Lecturer on Anatomy at, the London Hospital, &c. With ninety-four Illustrations. Cassell and Company, Limited. 1892. 8vo. Pp. 495.

THIS work is an abridgement of Mr. Treves' larger work which we recently reviewed at full length in this Journal. From it the illustrations and many of the descriptions are copied, and possesses in no small degree the merits which distinguished its progenitor. One mistake Mr. Treves has, we venture to think, made in omitting all that portion dealing with the conditions for operation and the preparation of the patient—subjects treated in a most masterly manner in the "Manual," and treated just in the way necessary for students, and calculated to make a permanent impression on their minds. Again, many of the anatomical details—a most essential point for students—have been considerably curtailed or totally omitted—another error of judgment. In both this and the larger work we hope to see some omissions rectified in a future edition. The date of publication of this edition affords no excuse for the omission of all reference to the operation of enucleation in dealing with tumours of the thyroid body. These, however, are minor blots on a book which possesses such admirable features, and which we can cordially recommend as the best student's manual of operations hitherto published. The paper, type, and general get-up of the book leave nothing to be desired, and the woodcuts are much in advance of those generally found in text-books of this class. Any student who has mastered the book may face a court of examiners without fear or trembling.

The Johns Hopkins Hospital Reports. Report on Gynæcology. I. By HOWARD A. KELLY, M.D. Baltimore. September, 1890. Pp. 122.

THERE are fifteen papers in this fasciculus (Nos. 3 and 4 of Vol. II.) of Reports, none of which is without interest for gynæcologists. In the second Drs. Kelly and Hunter Robb give a report of fifty abdominal sections performed in the Johns Hopkins Hospital in 139 days—Oct. 16, 1889, to March 3, 1890. Thirty-two of the patients were whites; 18 negresses, in whom ovarian tumours are rare, while myomata are frequent. In them, also, gonorrhœal salpingitis, especially the suppurative form, is of common occurrence. Of 42 operations undertaken for ovarian cysts, chronic inflammatory diseases of ovaries and tubes, tuberculosis, and hysterorrhaphy, none was fatal. Of the remaining eight operations three terminated fatally.

The fourteenth paper describes a case in which Dr. Kelly treated a stricture of a ureter by opening it through the vaginal vault and dilating. This operation—"kolpo-ureterotomy"—is unique, and likely to remain so. The patient appears to have been relieved for the time; but the final result is not stated.

The Climatologist. A Monthly Journal of Medicine, devoted to the Relation of Climate, Mineral Springs, Diet, Preventive Medicine, Race, Occupation, Life Insurance, and Sanitary Science to Disease. Edited by JOHN M. KEATING, M.D., FREDERICK A. PACKARD, M.D., CHARLES F. GARDINER, M.D. Vol. II. No. 1. Feb. 15, 1892. Philadelphia: W. B. Saunders. 8vo. Pp. 64.

THE comprehensive object of this Journal, now beginning its second annual volume, is amply stated on its title-page. The contents of the number which we have received are varied and interesting. Two or three of the original papers are specially worthy of notice.

Dr. Gilchrist, of Nice, gives a full account of *The Arsenical Springs of La Bourboule.* These springs, originally five or six, have been reduced to one by boring down to their common source, at a depth of over 80 metres from the surface. It flows from a fissure in the granitic rock at Choussy-Perrière, and, at the bottom of the boring, has a temperature of 60° C. (140° F.). The water contains a larger proportion of arsenic than any other mineral water known, each litre being equivalent to 21 drops of Fowler's Solution. The other mineral constituents, including "40 to 50 grains each of alkaline chlorides and bicarbonates, closely approach in quantity and proportion the normal mineral components of blood-serum—an ingenious analogy pointed out by Gubler." Arsenic in considerable proportion is found in certain springs of the southern Tyrol, but in association with iron, copper, manganese, and aluminum sulphates; and, therefore, not so well suited for therapeutical uses. The Source Perrière contains also traces of iron and lithium. Besides this thermal spring, a cold arsenical water has been discovered, containing only one-third the proportion of arsenic, with a small quantity of calcium carbonate, and abundance of carbonic acid, rendering the water palatable and easy of digestion. As might be expected, these arsenical waters are most highly recommended for the treatment of chronic diseases of the skin, and especially those of the eczematous class. In the weeping and irritable forms of eczema, however, the treatment is not successful, and the exacerbation of the eruption, which so often follows the beginning of a thermal course, not infrequently becomes persistent. In psoriasis the beneficial effects of these waters is unquestionable, and in urticaria, when not dependent on disorder of the alimentary canal, most obstinate cases have been cured. Cases of anæmia and chlorosis often benefit by the use of La Bourboule waters, and inhalations of the vapour are applied with advantage in affections of the throat and respiratory passages.

Dr. William A. Edwards, of San Diego, Cal., contributes a brief paper on the probable effect on climate of the formation of a new lake in the Californian desert. Between Arizona and the hills of San Diego lies the lowest region in the United States, from a few feet to 360 below sea-level, on an ancient sea-basin. Part of this dried-up sea-bed is a valley, some 60 miles in length, 15 miles wide, shut in by lofty hills. Hitherto the winter overflow of the Colorado River was excluded from this valley by sand-ridges; but these were swept aside by the heavy rainfall of Febuary last, and water began to pour into the desert at the rate of 16,000 cubic feet a second, subsequently increased to 35,000. The immediate result is the formation of a lake 145 square miles in extent, and 2 to 6—in some places 15—feet in depth. A more remote result can scarcely fail to be a permanent alteration in the climate of Southern California, due to the enormous evaporation from the new water-surface under a sun which raises the thermometer indication to 140° F.—112° F. in the shade. The summer climate may become damper, the winter colder. Already Beaumont and the adjacent mountains have been visited by cloud-bursts and terrific rains. These amounted to as many as five cloud-bursts in twenty-four hours on August 15, and at Seven Palms, a locality almost free from summer rains, rain is said to have fallen almost every day since the lake became a large body of water. However, we must also bear in mind that this somewhat unusual rainfall is not unprecedented, but has occurred once or twice before, never, however, to such an extent as that which has occurred since the return of the lake.

We are so apt to run in grooves, cut out for us by master-hands, that an attempt to shake us out of one of them is always wholesome. Such an attempt is a paper by Dr. Thomas J. Mays, of Philadelphia—"Observation and Experiment in Phthisis." It is intended as a reply to Tyndall's well-known article in the *Fortnightly Review.* The professor's cocksureness (which accompanies him into the political field) is not conciliatory, and more than Dr. Mays differ from him on more than medical questions. Dr. Mays maintains that there is abundant evidence against the now widely-accepted view that phthisis is contagious. Tyndall asserts that "no investigation has proved that the mortality among physicians by phthisis does not far exceed the average"—a very unscientific statement of his argument. Dr. Mays asserts that their mortality is far below the average, and quotes, in support of his assertion, the statistics of the Brompton and Friedrichshain (Berlin) hospitals. In the former, in 36 years, not one clearly authenticated case of consumption arose within its walls among its 29 physicians and assistant physicians, its 150 clinical assistants, and its 101 nurses, of which there existed a health record." In the latter, 2 physicians out of 83, and 4 nurses out of 798, in 16 years, became consumptive. In Naples, between 1782 and 1850, the belief prevailed that phthisis was communicable, and the most vigorous laws for reporting, isolating, disinfecting, &c., were enforced without, says Dr. Mays, the slightest diminution of the mortality due to the disease. After adducing hospital evidence of the *non*-communication of phthisis, from Falkenheim, Görbersdorf, Soden, and Madeira, and connubial statistics from Dr. Schnyder, Dr. Flint, and M. Leudet, Dr. Mays concludes:—

> "Now, if all these data mean anything, they assert positively that consumption or phthisis does not arise by being transmitted from person to person through contagion. The pursuit of experimental investigation, which Dr. Tyndall affirms will root out 'this terrible scourge of tuberculosis,' has absolutely done nothing to unravel the origin or propagation of phthisis, as we meet it in every walk of human life. All that it has done is to show that the disease may be transplanted by inoculation after it has been called into existence by other causes. The great difficulty has always been a neglect to distinguish between the origin and transplantation of consumption. These two phenomena are actually treated as if they were one and the same thing, yet there is about as much difference between the original genesis of a new form of life, whether normal or abnormal, and the artificial transplantation of the same, as there is between sunlight and moonlight."

Practical Pathology. A Manual for Students and Practitioners. By G. SIMS WOODHEAD, M.D., F.R.C.P. Ed. Third Edition. Edinburgh and London: Young J. Pentland. 1892. Pp. 652.

NO very extended notice is required of so well known a work as that of Dr. Woodhead, and no praise is needed by a book whose excellence is so fully recognised and whose popularity is so firmly established.

The present edition is, however, a great advance on its predecessors. The size of the volume is increased by 120 pages over the second edition, the number of illustrations is raised from 162 to 195, much altogether new matter is added, and every page bears marks of careful revision. The most important addition is a chapter on Inflammation, Organisation, and Repair. In this we find descriptions of typical examples of these processes—namely, of inflammation of the omentum, acute metastatic miliary abscess of the heart in ulcerative endocarditis, and pleurisy and pericarditis. The repair of wounds and ulcers is admirably described and illustrated, and a section is devoted to the description of "vegetations" as met with on the surface of the endocardium and aorta.

In the section on Suppuration the author expresses himself very guardedly on the subject of phagocytosis. He says:—"There can be little doubt that these cells (leucocytes) do take up micro-organisms, but whether before or after the micro-organism is dead is an exceedingly difficult question to settle, for it must be remembered that micro-organisms may be very distinctly stained, even after they are dead, if degeneration has not commenced; it must also be borne in mind that what organisms can do, cells can also effect, and that these leucocytes throwing out a digestive fluid, or at any rate some material detrimental to the existence of micro-organisms, may prepare the organisms, killing and even partially digesting them, taking them into their protoplasm as inert matter, and thus continuing the process of digestion."

The earlier chapters on the methods of conducting a *post-mortem* examination and on pathological histology are brought thoroughly up to date. The description of the operations of hardening, cutting, staining, and mounting microscopic objects leaves nothing to desire, and all the details are so fully given that anyone who follows the directions here laid down will have little difficulty in making good preparations.

In the chapter on the liver we notice a beautiful new drawing of the naked-eye appearance of the normal organ, showing the size and shape of the lobules; a new drawing of fatty infiltration much less diagramatic than the old one in former editions; an admirable new figure of advanced cyanotic atrophy; a good account (illustrated by two good drawings, one of them new) of acute interstitial hepatitis as met with in scarlatina and other acute infective diseases; and new figures illustrating biliary cirrhosis and acute yellow atrophy.

Speaking of the different forms of cirrhosis the author, while retaining with slight modification the table of differences between common and biliary cirrhosis given in the second edition, seems inclined to separate these forms less sharply from one another than he previously did; and he calls attention to the fact that in many cases of hypertrophic cirrhosis the interstitial changes occur around the hepatic artery rather than the bile ducts.

In the chapter on the heart there is a new figure of fibroid degeneration of the myocardium, and in the next chapter an excellent figure of atheroma of a cerebral vessel.

To the chapter on the kidney there are many additions, among which we may notice new drawings of the normal kidney, of catarrhal nephritis, cloudy swelling of the epithelium, fatty degeneration, and suppurative nephritis due to ulcerative endocarditis.

In the section on tube-casts we read that hyaline casts "appear to consist of coagulated serum albumen which has made its way from the glomerular capillaries into the tubules." It is difficult to see what could cause coagulation of serum albumen in the body.

In the chapter on the lungs the changes in acute bronchitis are illustrated by two beautifully-executed new drawings.

Acute congestion of the spleen and embolic infarction of this organ are the subjects of two new figures.

Among other very successful new illustrations we would notice those of a typhoid ulcer showing typhoid bacilli; of septic osteomyelitis; of the cord in multiple sclerosis and in locomotor ataxy; of a myxomatous tumour; of the different varieties of sarcoma; of osteo-sarcoma, and of the supposed coccidia in cancer. As to the parasitic nature of these bodies the author expresses himself rather uncertainly. He, however, is clearly inclined to accept this view of them.

Some of the most recent methods for preparation of the nervous system, as those of Golgi and Marchi, are given in the text; and in an appendix the Ehrlich-Biondi triple staining fluid is described. It is by this reagent that Ruffer and Walker have got the best results in the demonstration of coccidia in cancer.

On the whole, we can recommend this new edition of Dr. Woodhead's book in the strongest way. There is no other work in the English language which will be found so helpful to the practical worker, combining as it does minute and accurate directions for the examination of all the organs, an admirable account of all the changes to which they are subject, and an atlas of pathological histology of almost unrivalled beauty and extent.

Ptomaïns and other Animal Alkaloids: their Detection, Separation, and Clinical Features. By A. C. FARQUHARSON, M.D. Bristol: John Wright & Co. Pp. 152.

IN this little book will be found a good account of the development and present condition of our knowledge of the ptomaïns and leucomaïns, or so-called animal alkaloids, In the earlier chapters a general description is given of the entire group of alkaloids, followed by a fairly appreciating historical sketch of the course of discovery of the putrefactive alkaloids in particular. To this succeed chapters on the general properties and chief methods for the separation and detection of ptomaïns, and on the special properties and reactions of the most important non-oxygenated and oxygenated ptomaïns which have so far been investigated. The concluding chapter is clinical and deals with ptomaïn-poisoning. Here we find an account of how ptomaïns get into the body, whether developed in its interior by putrefactive or metabolic processes, or introduced from without by the air or food. In the section on toxic substances developed in the alimentary canal, a remarkable series of cases of insanity are recorded in which the symptoms seemed to be due to putrefaction in the intestine, since they were relieved or cured by free purgation and asepticism of the bowel.

Although making no pretension to originality, and although not full enough for the expert, this little work will be found useful by the general reader who wishes to know where we stand at present as regards our knowledge of the interesting and important subject with which it deals.

The Wife and Mother: A Medical Guide to the Care of her Health and the Management of her Children. By ALBERT WESTLAND, M.A., M.D., C.M. London: Charles Griffin & Co., Limited. 1892. Pp. 282.

THIS is a carefully written and accurate book, avoiding the Scylla and Charybdis of such works—the mention or suggestion of unnecessary matters which would only attract the attention of the prurient, and the other extreme of high-flown and useless generalities. Dr. Westland has divided his book into four parts, dealing respectively with early married life, early motherhood, the child, and later married life. Each of these is fully and systematically dealt with, and she must be an exceptionally stupid woman who will not profit by having it to refer to. Not only are all ordinary details, such as feeding and general care of the child, treated of, but others less frequently thought of but equally important subjects, such as Inherited Tendencies, receive attention, and are judiciously and seriously discussed. In the chapter on Common Maladies of Children, general information as to their character and course are given, and useful hints are given for those parts of the management which fall to the mother; but systematic description has been avoided, and there is no encouragement for home treatment of diseases.

We can recommend this as a carefully planned and carefully carried out book.

Illustrated Lectures on Nursing and Hygiene. By R. LAWTON ROBERTS, M.D., D.P.H. Second Edition. With Illustrations. London: H. K. Lewis. 1892. Pp. 213.

SOME slight alterations and additions have been made, but practically this is the same as the first edition. It will be found a useful and trustworthy handbook by nurses, and a useful guide to lecturers. We would specially commend the manner in which Dr. Roberts gives credit to other authors for any of their ideas which he adopts: this is a rare form of honesty in medical handbooks. There are sixty-nine well-chosen illustrations and numerous tables and forms. Tables of quarantine after exposure to infection, and the length of time during which contagion lasts, are taken from "A Code of Rules for the Prevention of Contagious Diseases in Schools, by the Medical Officers of Schools Association," and will be found generally useful.

Guide to the Administration of Anæsthetics. By HENRY DAVIS, M.R.C.S.; Teacher and Administrator of Anæsthetics at St. Mary's Hospital, and Assistant Anæsthetist at the Dental Hospital of London. Second Edition. London: H. K. Lewis. 1892.

THIS little book of ninety-two pages has reached a second edition within a short period. The present edition gives the principal conclusions of the Hyderabad Chloroform Commission. Like the majority of London anæsthetists, Mr. Davis is a firm believer in ether. The booklet is intended for students, and does not profess to contain original matter.

Transactions of the American Orthopædic Association. Fifth Session held at Washington, D.C., September 22, 23, 24, and 25, 1891. Volume IV. Philadelphia: Published by the Association. 1891.

FIFTY-FOUR original papers on the subject of orthopædics may be said to justify the specialty. We cannot, however, but be surprised at the persistency with which some question crops up for discussion to generation after generation of physicians and surgeons. We need do no more than mention Pott's spinal caries. In the volume before us the disease occupies a prominent place, and the disease is considered from the standpoints of Pott, Earle, and Abernethy; indeed, as Dr. Lee points out in his paper on the "Use of Suspension in Pott's Disease," Hippocrates wrote on spinal caries, and recommended suspension as a remedy for it.

Amongst modern diseases may, however, be counted "typhoid spine," which is the subject of a brief but excellent paper by Dr. V. P. Gibney, of New York, which gave rise to an interesting discussion.

The volume is profusely and beautifully illustrated, and contains both a good table of contents and a full index of subjects and authors. All who are interested in orthopædics will find the volume instructive, and the general practitioner will learn from its pages many useful, practical hints, especially about the diseases of childhood.

The Society is doing much good work, and we heartily commend the Transactions to our readers.

Saunders' Question Compends, No. 20. Essentials of Bacteriology: being a Concise and Systematic Introduction to the Study of Micro-Organisms. By M. V. Ball, M.D.; Assistant in Microscopy, Niagara University, New York. With seventy-seven Illustrations, some in colours. Philadelphia: W. B. Saunders. 1891. Pp. 159.

This little book contains in very small space a great deal of information. After a short introduction on the classification and properties of microbes, the methods of staining are described fully and clearly; then the methods of culture and inoculation—of course briefly, still anyone reading carefully this description will get a very good idea of how things are done.

Part II. relates to special bacteriology, each variety being described at more or less length, proportionately to its importance. Methods of staining and peculiarities of growth, and any noticeable properties of each bacterium are mentioned, non-pathogenic germs being included as well as pathogenic. The last chapter describes how a bacteriological examination of air, soil, and water is made.

The illustrations are instructive, though some of them are rather rough. Some of the coloured illustrations—*e.g.*, tubercle bacilli in sputum—are really very good.

If anyone wishes to learn the rudiments of bacteriology we can recommend this work. It is, however, far from complete, and if the student wishes to advance at all, or to do any work for himself, we would recommend a larger work.

Saunders' Question Compends, No. 23. Essentials of Medical Electricity. By D. D. STEWART, M.D., Philadelphia, and E. S. LAWRANCE, M.D., Philadelphia. With sixty-five Illustrations. Philadelphia: W. B. Saunders. 1892. Pp. 158.

THIS is an unpretentious little book, which gives a very fair idea of the subject of which it treats. It represents an effort "to place before students and post-graduates some of the most distinctive points connected with medical electricity in such a manner that they may form a general idea of its diagnostic and therapeutic value, concerning which they hear so much and many of them know so little."

The principles of electricity are briefly mentioned, and the more common apparatus described. Then its physiological effects are treated of—its uses as a diagnostic agent, and the phenomena known as the reaction of degeneration. Finally, the uses of electricity in various special diseases are carefully indicated. As the work only treats of "medical electricity" the galvano-cautery is not described; electrolysis is only mentioned in reference to the treatment of aneurysms. The book is clearly written, and gives a good elementary account of its subject.

A Junior Course of Practical Zoology. By A. MILNES MARSHALL, M.D., D.Sc., M.A., F.R.S. Assisted by C. HUBERT HURST, Ph.D. Third Edition. London: Smith, Elder & Co. 1892. Pp. 478.

THE third edition of this well-known handbook is nearly a reprint of the second. Of course some few additions have had to be made, but the bulk of the book has been increased by but 38 pages since the first edition. A large number of types are fully and carefully described, directions for dissections being inserted. No better handbook for the zoological laboratory exists than this, and any student who masters the types dealt with will have very little difficulty in acquiring a sound knowledge of zoology.

PART III.

SPECIAL REPORTS.

REPORT ON PRACTICE OF MEDICINE.

By Henry T. Bewley, M.D., Univ. Dubl.; F.R.C.P.I.; Assistant Physician to the Adelaide Hospital; and Lecturer on Medical Jurisprudence in Trinity College, Dublin.

CONTENTS.

I. THE MANAGEMENT OF CHRONIC HEART DISEASE.
II. THE TREATMENT OF MYXŒDEMA.
III. THE TREATMENT OF PNEUMONIA BY THE ARTIFICAL PRODUCTION OF ABSCESSES.
IV. THE TREATMENT OF PNEUMONIA BY LARGE DOSES OF DIGITALIS.
V. THE TEMPERATURE IN ACUTE PRIMARY PNEUMONIA IN CHILDREN.
VI. THE ACTION OF ANTIMONY IN SKIN DISEASE.
VII. TREATMENT OF LOCOMOTOR ATAXY BY BENDING THE SPINE.
VIII. THE EFFECT OF TOTAL TRANSVERSE LESIONS OF THE SPINAL CORD ON THE VARIOUS REFLEXES.
IX. ATHEROMA OF THE CORONARY ARTERIES.
X. ABNORMALLY SLOW ACTION OF THE HEART.
XI. HYSTERICAL PYREXIA.
XII. PALPATION OF THE GALL BLADDER.
XIII. A NEW RE-AGENT FOR ALBUMEN IN URINE.
XIV. ON THE WHITE BLOOD CORPUSCLES IN PNEUMONIA.
XV. TREATMENT OF THE MORPHIN-HABIT.
XVI. ABDOMINAL SECTION FOR PERFORATION IN TYPHOID FEVER.
XVII. ON NUTRIENT ENEMATA.

I.—THE MANAGEMENT OF CHRONIC DISEASE OF THE HEART.

A most valuable lecture on this subject by Dr. James Little is contained in the *Birmingham Medical Review*, January and February, 1892. After describing the various types of heart cases commonly met with, he discusses the immediate causes of suffering in all forms of chronic heart disease, referring them to five classes:—

1. Over-distension of the cardiac cavities, and particularly of the right auricle and ventricle.

2. Inefficient systole in consequence either of want of power, or want of regularity, and this inefficient systole may be evident in the working either of one or of both ventricles.

3. Defect in the organs which work along with and help the heart to send the blood through the systemic and pulmonary vessels.

4. Disturbances of the innervation of the heart of cerebral or spinal origin, or originating in overloading of the stomach, or in distension of the bowels, or in affections of the genito-urinary system.

5. An unhealthy condition of the blood, which may be either imperfectly depurated, as occurs in gout and Bright's disease, or abnormally watery, as we see in the various forms of anæmia.

When over-distension of the cardiac cavities exists, Dr. Little has found most useful removal of blood (generally, leeches), a purgative (calomel), and restriction of the amount of liquid drunk.

When the trouble is due to inefficient ventricular contraction (of which the symptoms and signs are fully discussed) tonics are useful, among which digitalis takes the first place. It is thus contrasted with strophanthus:—

1. Digitalis is far the more frequently useful of the two.

2. If a slowing and steadying of the heart has been produced by digitalis, it is very often advantageous to keep up its action by an occasional dose.

3. There are some patients whom digitalis sickens, and a smaller number in whom, though the drug does not sicken, it nevertheless fails to bring about an increase in the force of the cardiac contractions, and in such cases we may often produce by strophanthus the effect the older remedy was powerless to accomplish. I think patients who have widespread thickening of their smaller arteries sometimes benefit much more by strophanthus than by digitalis.

4. Strophanthus is much more rapid in its action, but is not suitable for prolonged use. In one case in which during three or four days its good effect was conspicuous, the heart, under its prolonged use, became extremely frequent, and the sense of cardiac distress extreme, and yet, when its employment was entirely given

up for a week, it proved as rapidly and as distinctly useful as before.

"The most striking effect," says Dr. Little, "that I have ever seen in rousing a failing heart followed the administration, every fourth hour, of three doses of ten minims of tincture of strophanthus, and a teaspoonful of brandy in a small cup of hot black coffee."

Other cardiac tonics, the treatment of cardiac dropsy and angina pectoris, and other points of extreme practical interest are fully discussed. We cannot, however, here refer more fully to the lecture. We would, however, commend the original lecture most warmly to our readers.

II. THE TREATMENT OF MYXŒDEMA BY MEANS OF THYROID GRAFTING OR INJECTIONS.

A considerable number of cases, illustrating either of the above-mentioned modes of treatment, continue to be published. It is most noteworthy that there is a nearly universal consensus of opinion as to the utility of this procedure.

Dr. John Macpherson (*Edinburgh Medical Journal*, May, 1892) relates a most successful case of a woman who, at the age of thirty-six, began to show symptoms of myxœdema. At the age of thirty-nine she came under Dr. Macpherson's care; she was then lethargic, clumsy, slow, with cold, blue, swollen extremities. She suffered from melancholia, and had delusions of fear. The physical signs of myxœdema were all pronounced. Her average temperature was 97·2°, and daily amount of urine 29 ounces. On October 22, 1891, the right lobe of a sheep's thyroid was carefully removed (for details see original paper), divided into two halves, and an incision having been made into the subcutaneous fat of the patient's submammary region on each side, one half of the thyroid lobe was inserted into each wound. The wounds were then closed and dressed. The wounds did not heal by first intention, and considerable suppuration occurred; however, within twelve hours there was a marked mental change in the patient. She became talkative and cheerful, and intelligence and spontaneity increased greatly; her speech, however, remained slow and drawling. Her average temperature for nineteen days after the operation was 98·9°, and daily amount of urine 41 ozs. The melancholia and delusions disappeared, and the skin became soft and smooth. "In conclusion," says Dr. Macpherson, "I do not claim that the operation has removed the myxœdematous condition, but it has relieved the symptoms, which, with the exception of melancholia and stupor, have all been more or less constant for three years." He prefers transplantation to injection of juice; a considerable portion of the transplanted gland, he believes, became vascularised, and he holds that thus the cure is more likely to be permanent than when injections are employed.

A case in which injections of thyroid extract were combined with massage with extremely great success, was recorded by Dr. Wallace Beatty (*British Medical Journal*, March 12, 1892). An account of this case was also given in the May number of this journal.

Another case treated by injection of extract of pigs' thyroid is recorded by E. C. Carter, M.B. (*British Medical Journal*, April 16, 1892). The patient, a woman aged forty-three, presented the typical signs of myxœdema, and in addition had suffered from occasional attacks of excitement with delusions of persecution, on account of which she had been since 1887 in Lancashire County Asylum. She was treated with injections twice a week from Oct. 21, 1891, till Feb. 7, 1892. Dr. Carter notes marked improvement as a result of the treatment—"By the end of the year it would have been a matter of difficulty, if not impossibility, to diagnose the condition from the facial appearance." The mental state improved, but not equally with the bodily—"The long establishment of mental symptoms makes it more than probable that irreparable degenerations had taken place in the brain cortex." One of the injections caused slight inflammatory trouble about the seat of puncture. Altogether the case must be put down as another instance of the success of this treatment.

Another successful case is recorded by Dr. Davies (*British Medical Journal*, April 23, 1892), but no details are given.

III. THE TREATMENT OF PNEUMONIA BY THE ARTIFICIAL PRODUCTION OF ABSCESSES.

Prof. Fochier (*Lyon Méd.*, 1892, pp. 533 and 551) believes that when suppurative processes have taken place in internal organs, the disease may be relieved by producing elsewhere artificial abscesses, which may be evacuated surgically. These abscesses he produces by injecting essence of turpentine into the deltoid or hypogastric regions. Dr. Bard (Lyons) contributes the details of a very serious case of pneumonia, where such injections had been used with success. His patient, a tailor aged forty-nine years—

a man of good constitution, but of rather alcoholic habits—came into hospital on the tenth day of an acute pneumonia, with consolidation of the upper two-thirds of the right lung. Temperature, 103·6° F.; viscid, amber-coloured sputa; weak pulse, atheromatous arteries, and in a state of considerable weakness and danger. A small injection of turpentine was made into the right shoulder; there was some smarting, and two hours later a good deal of pain in both shoulders and arms, with redness and swelling, but the pain soon ceased. The patient went to sleep, and felt much better next morning. The temperature did not sink below 100° F. till the third day after the injection, but after that it did not rise again. The lung cleared up quickly, and no further symptoms showed themselves. On the fourth day after the injection the abscess in the deltoid was opened; it was large and deep, but healed quickly. The patient left hospital quite well. M. Bard believed that the injection had been the starting-point of the successful resolution of the lung.

M. Dieulafoy gives an account of the use of the same method in the case of a woman of forty-seven, who had severe pneumonia, following on influenza, with much danger of complete collapse. He gave four injections of fifteen drops of turpentine into the shoulders and thighs, which caused sharp pain for about two hours. In about twenty-four hours improvement commenced, and recovery ensued. The abscesses were opened, and the pus was found sterile.—*Practitioner*, July, 1892.

Dr. R. Lépine has employed the same method in one case. Although at the time of the injections the case seemed hopeless, improvement soon took place, and ended in recovery.—*La Semaine Méd.*, 1892, No. 11.

Other successful cases are recorded by Bard (*Lyon Méd.*, April 17, 1892); Guigeot (*Sem. Méd.*, May 18, 1892); and Raoul (*Rev. Gén. de Clin. et de Thér.*, May 11, 1892). In all these the results of the injection of turpentine corresponded exactly with those in the cases we have quoted above. On the other hand, M. Rendu (*Sem. Méd.*, May 18, 1892) used this method in three cases, all of which died. Two of the patients, however, were at the point of death when the injections were given, and the third was a case of broncho-pneumonia.

Fochier (*loc. cit.*) believes that the artificial abscesses check the inflammation in the lungs by "Fixing" it elsewhere, and calls them "abcès de fixation." Chantemesse and Guigeot (*loc. cit.*)

prefer the theory that the abscesses do good by causing leucocytosis, and bringing up additional leucocytes (phagocytes) to assist those already struggling with the pathogenic organisms in the lungs.

IV. THE ABORTIVE TREATMENT OF PNEUMONIA BY LARGE DOSES OF DIGITALIS.

Prof. Petresco (Bucharest) has for many years relied entirely upon digitalis in the treatment of pneumonia; some time ago he published the results obtained by him in 577 cases. In the *Bull. Gén. de Thérapeutique*, Feb. 15, 1892, he reports 178 additional cases. He states that he always uses a strong infusion of the leaves of the plant, from one to three drachms being infused in eight ounces of water and simple syrup. Of this mixture a tablespoonful is given every hour during the day. In this way some of his patients took as much as 120 grains of digitalis leaves in 24 hours.

Petresco states that these large doses abort the pulmonary process as a rule within three days. The fever and all the physical signs, both local and general, disappear as if by magic. A temperature of 105° F. at the beginning of the illness drops to 96° F., and the pulse falls from 120 to 35 or 30 beats a minute. Not only was the duration of the disease shortened, but also the period of convalescence. The mortality of the disease was reduced to 1·22 per cent.; in no case were any signs of poisoning noticed.

His principal conclusions are:—

1. Pneumonia can be aborted by digitalis given in large doses from the beginning of the attack.
2. The dose of 60 to 120 grains a day of the powdered leaves (in infusion) is the proper therapeutic dose in the pneumonia of adults; it is only from a dose of this amount that we can expect immediate curative effects.
3. The more intense and grave the attack, the better were large doses borne by the patient.

In the *Centralblatt für die ges. Therapie*, 1891, Bd. XI., Löwenthal (Vienna) recounts his experience of this method of treatment. He employed it in twelve typical cases, two of which were exceedingly bad cases. He gave digitalis in infusion to the amount of 45–60 grains in the course of twenty-four hours. All the cases recovered.

A paper on this subject appears in the *Therapeutische Monatshefte*, No. 4, 1892, by Dr. Hoepfel (Bärnan). He gives details of fifteen cases, of which fourteen recovered; the fatal case was one of double pneumonia, with mitral narrowing. He employed an infusion of digitalis, and gave it very frequently (often every hour), so that an amount corresponding to 45–60 grains of digitalis leaves was used in twenty-four hours. He employed, in addition, ice-bags and web-packs. His conclusions are:—

1. There was no poisonous action of the drug.
2. He believes that the attack is considerably shortened.
3. In eight out of the fifteen cases the case ended by lysis.

Hoepfel's report is, therefore, very favourable to this treatment, and some of them appeared much benefited when the dose of digitalis was raised to 50–60 grains a day; but, on the other hand, ill-consequences were in some cases observed—such as collapse lasting for a long time, in consequence of weakened action of the heart, disturbance of the circulation, and extreme prostration; the face became pale, and the respiration became exceedingly frequent, and remained so for 7–14 days; the pulse was lessened in frequency—after the crisis it sank in some cases to 35 beats per minute; the blood-pressure also fell, and remained low for some weeks.

V. THE TEMPERATURE IN ACUTE PRIMARY PNEUMONIA OF CHILDREN.

Dr. L. Emmett Holt has carefully recorded and tabulated the range of temperature in a large number of cases of acute pneumonia occurring in young children. He comes to the following conclusions:—

1. The temperature curve in lobar pneumonia of children over three years old resembles the adult type, being steadily high, and terminating by a crisis, this occurring in nearly 80 per cent. of the cases.
2. The most frequent critical day is the seventh; although it occurs almost as often on the sixth, eighth, and fifth days, the frequency being in the order named.
3. Under three years the proportion of typical cases is very much smaller; crisis occurs in only about one-half the cases, and this is usually at a later day than among older children.
4. Under three years the temperature tends towards the remittent type, wide fluctuations being not uncommon in uncomplicated cases. In a smaller number it is steadily high until the crisis.

5. The mortality is in direct proportion to the height of the temperature when it is above 105° F.; below this point it seems no constant relation to it.

6. The most frequent cause of a post-critical rise or of delayed crisis is extension of the disease in the lungs, or complicating pleurisy.

VI. THE ACTION OF ANTIMONY IN SKIN DISEASES.

Drs. Jamieson and Douglas have used tartar emetic in several cases with very good results. They describe several cases of psoriasis inveterata and exfoliative dermatitis cured by this drug. Their most important conclusions are:—

1. Antimony lowers temperature in some conditions of the skin associated with hyperæmia and dryness of the surface to a well-marked extent.

2. It softens the skin, imparting increased succulence to its cells, augments insensible perspiration, improves the nutrition of the integument, diminishes hyperæmia, and lessens the tendency to premature and excessive epidermic exfoliation.

3. While advantageous in the early congestive stage of acute eczema, it is contra-indicated in the period characterised by oozing—the second stage of Brocq, that of rupture of vesicles—though it may again prove serviceable at a later era—the fourth stage of Brocq, that of successive desquamations.

4. If Mr. Morris is right, as he probably is, that it is likely to be of special use in cases where there is a functional nervous cause, it may prove of value in diffuse scleroderma and possibly in myxœdema.

5. The action of antimony may be contrasted with that of pilocarpin. Pilocarpin produces a copious perspiration for a brief portion of the twenty-four hours; antimony bathes the epidermic cells continually in a gentle moisture. Pilocarpin lessens or cures a pruritus in a dry, atrophic, anæmic, senile skin, by flushing the emunctories, but its rapid stimulant effect is not suited for cases of active hyperæmia, which are more amenable to the influence of antimony. Both, however, improve nutrition, and aid in the deposition or restoration of diminished subcutaneous connective tissue.

The dose adopted was ⅛ grain, three or four times daily.—*Edin. Med. Journ.*, June, 1892.

VII. THE TREATMENT OF LOCOMOTOR ATAXY BY THE METHOD OF BONUZZI.

This method of treatment is described in the *Revue de Thérapeutique Générale et Thermale*, 1892, No. 2. The patient lies upon his back, with a pillow under his head. The doctor then taking hold of the patient's ankles, forcibly flexes his legs at the hip-joints as much as possible; the knees are kept extended throughout. Thus the spinal column is strongly bent, and experiments show that the effect on the spinal cord produced by this method is three times as great as the effect produced by suspension. The other advantages of this method are that there is no mechanical apparatus necessary, and the amount of force can be accurately gauged. On the other hand, care must be taken not to flex the legs too strongly, for if too great force be used pain may be caused in the back, and swellings at the back of the thighs, due to intramuscular hæmorrhage.

In cases in which this method was employed, the ataxic gait was improved and pains were lessened.

VIII. THE EFFECT OF TOTAL TRANSVERSE LESIONS OF THE SPINAL CORD ON THE VARIOUS REFLEXES.

Some years ago the generally accepted view on this subject was that, in total transverse lesions of the cervical or dorsal regions of the cord, the superficial and deep reflexes situated below the level of the lesion were at first abolished, but that they subsequently returned—generally in an exaggerated form. In a paper published in 1890 Dr. Bastian called these views in question, and now Dr. William Thorburn (Manchester) has published a valuable paper (*Med. Chronicle*, May, 1892), reviewing a number of cases, and confirming and extending Bastian's views. Dr. Thorburn's conclusions are:—(1) In *total* transverse lesions of the cord, both the superficial and the deep reflexes are permanently and entirely abolished; (2) it is only in *partial* lesions that we find retention or exaggeration of these reflexes; and (3) the abolition of the reflexes is the result of isolation of the spinal centres from their cerebellar connections.

With regard to the first of these conclusions, the duration of many of the cases was too long to admit of the result being attributed to shock, and it is impossible to suppose that the lumbar cord was injured, as the majority of the cases were cervical injuries

In the cases in which there was complete paralysis and anæsthesia, the deep reflexes remain absent for periods of practically indefinite duration. When the lesion does not cause complete paralysis or anæsthesia, the deep reflexes remain in either a normal or an exaggerated form. The superficial reflexes, however, do not conform absolutely to these rules. In nearly all cases, both of complete and partial lesions, they disappear and remain absent, the "plantar reflex" only existing. The latter is obtained in many cases of complete and partial lesions.

IX. ON ATHEROMA OF THE CORONARY ARTERIES.

Dr. R. B. Wild contributes an important statistical paper on this subject to the *Medical Chronicle* for July, 1892. He gives details as to the state of these vessels as found at 112 autopsies on patients of all ages and both sexes, made at the Manchester Royal Infirmary. He finds that the incidence of disease is practically equal in the two sexes, but that age appears to be the chief factor in determining the occurrence of atheroma.

Age under 25,	percentage of	diseased coronaries,	15·0
25–35,	,,	,,	27·7
35–45,	,,	,,	54·3
45–55,	,,	,,	63·6
55–65,	,,	,,	77·0
Over 65,	,,	,,	75·0

Organic heart disease did not appear to increase the frequency of the occurrence of atheroma of the coronaries; but on the other hand, chronic Bright's disease distinctly increased the liability of these vessels to become diseased.

In 5 of the 112 cases sudden death occurred; in each of these an advanced degree of atheroma was present, and in three the coronary arteries were completely calcified.

With regard to the connection between diseased coronaries and angina pectoris, Dr. Wild was not able to come to any very definite conclusions, as none of his cases had ever suffered from angina. He, however, puts forward the following views:—

1. Cases of advanced disease of the coronary arteries occur frequently without the symptoms of angina pectoris.

2. In patients over forty-five (*i.e.*, at the ages when fatal angina usually occurs), atheroma of the coronary arteries was present in about two-thirds of all the cases, none of whom suffered from angina. The probabilities are, therefore, two to one in favour of

atheroma of the coronaries being present in a patient over forty-five dying from angina pectoris quite apart from any causal relation between the two conditions.

3. The association of sudden death with advanced disease of the coronary arteries suggests the possibility that in cases of cardiac pain from any cause (whether true angina or so-called pseudo-angina) the presence of diseased coronary arteries may be the factor determining a fatal issue; the almost invariably fatal termination of the disease in old people being due to the frequency of coronary atheroma in advanced life, the better-nourished hearts of younger persons being able to recover from the depressing effect of severe pain.

X. ON ABNORMALLY SLOW ACTION OF THE HEART.

It is well known that this condition is produced by several causes, such as general weakness, insufficient nourishment, fatty degeneration of the heart-muscle, atheroma of the coronary arteries, pressure on the brain, irritation of the pneumogastric nerve, and the action of certain drugs; but there are, in addition, some cases in which no cause can be found for great slowness of the heart's movements. In some cases, says Dr. Opitz, there is no reason for regarding slow action of the heart as any morbid phenomenon—it is merely a kind of idiosyncrasy.

A labourer was admitted into hospital, suffering from pneumonia. When the disease was at its highest, the heart was only beating 60 times per minute; when convalescence occurred the pulse sank to 40, and remained permanently at this figure.

Another case of the kind, recorded by Opitz, is that of an old woman, aged seventy-three. For several months her heart beat at the rate of 28 to 30 beats per minute. As the result of intestinal trouble she became weak, and the heart-beats fell to 20–24 per minute. During this period the radial pulse was strong and full; the heart-dulness and sounds were normal. Her general condition remained unchanged, but gradually the action of the heart increased in rapidity, until after several months the number of beats per minute was about 80. At this figure they remained up to the time of writing.

The most careful investigation could detect no abnormality, so that Opitz cannot suggest any cause which could for months so reduce the rapidity of the heart's action.—*Cbtt. f. innere Med.*, 1892, No. 8.

XI. HYSTERICAL PYREXIA.

Dr. Affleck (*Edinburgh Med. Jour.*, August, 1892) calls attention to the pyrexia occasionally met with in hysterical women. This phenomenon appears under two forms. Febrile movements of sudden and startling amount have been noticed, and extraordinary readings, such as 110° or 112° F., have been recorded. Such cases have always been looked on with great suspicion, as the patient has sometimes been detected tampering with the thermometer; but it is certain, says Dr. Affleck, that there occasionally occur in hysteria extreme degrees of temperature elevation. The other form is made up of those cases in which there occurs a persistent febrile temperature of a more or less continued type, of obviously neurotic origin, occurring as a symptom of hysteria, and accompanied with other febrile phenomena, yet with a striking absence of some of the cardinal features of true pyrexia.

He relates a case of a woman, aged twenty-seven, who was under his care in the Edinburgh Royal Infirmary. She had suffered from several hysterical symptoms, but did not appear to have any serious disease. For five weeks her temperature kept very irregular, running up nearly every day to 101 or 102° F., and then falling to normal again. During the following month much higher temperatures were several times recorded, on one occasion the following observations being made by the resident physician simultaneously with three thermometers—in mouth, 109·6°; in right axilla, 108·8°; in left axilla, 107·6° F. She remained four months in the Infirmary, and it is noted that the temperature was never an entire day without some marked irregularity. During this time she gained weight; the amount of urea excreted was normal.

The conclusions Dr. Affleck draws from this case are as follows:—

1. There may exist over a lengthened period cases of daily rise of bodily temperature, very misleading from their closely simulating the symptoms of organic disease, and yet wholly dependent on disturbed nervous influence (hysteria).
2. A careful observation of such cases, including regular weighing and frequent urea estimation, will probably bring out the fact that no excessive tissue waste is in progress.
3. There will usually be found on careful observation other symptoms, or a history pointing to hysterical neurosis.

XII. THE PALPATION OF THE GALL-BLADDER.

As this is a subject of considerable importance on which a considerable degree of uncertainty seems to exist, it may be well to refer here to a paper by Rheinstein (*Berliner klin. Wochenschrift*, 1891, No. 52). He states that it is possible by the bimanual method to palpate this organ in numerous cases. The normal gall-bladder in its normal position can never be felt, the reason for which is that its walls are soft and relaxed, it lies for the most part behind the ribs, and it is movable. But when in consequence of pathological processes, its contents increase so as tightly to distend its walls, when it is increased in size, and when its position is altered so that it is placed lower down in the abdomen—under these circumstances it may be successfully palpated if the abdominal walls be not very fat or very muscular. The intestines must be empty, and the abdominal wall relaxed; the patient may either sit upright or lie on his back. The doctor now with his left hand forcibly, but evenly, presses the right lumbar region forward, and presses with his right hand backwards as it were against the left hand, the right hand being laid flat on the front of the abdomen, with the points of the 2nd, 3rd, and 4th fingers placed just below the end of the 9th costal cartilage on the right side. Sudden pressure and the exclusive use of the finger-tips are to be alike avoided; the fingers as a whole should be gently bent at the metacarpo-phalangeal joint, and pressed gradually against the abdominal wall.

Another method of examining the liver in cases in which it projects below the costal arch, is as follows:—The patient sits upright; the investigator with his left hand "fixes" the liver by grasping it with the thumb placed in front close to the edge of the ribs, and the fingers behind. He then palpates the liver with his right hand, placing the thumb on the upper surface of it, and sinking the fingers as far as possible under its anterior margin. In this manner the fissure for the gall-bladder and the umbilical fissure and the gall-bladder can be felt, and the contents of the latter may be pressed out. In some cases it is even possible to feel structures situated in the portal fissure.

XIII. A NEW RE-AGENT FOR ALBUMEN IN URINE.

Dr. E. Spiegler calls attention to the want of delicacy from which the ordinary tests for albumen suffer; even the most delicate of them, acetic acid and ferro-cyanide of potassium, fails when the amount of albumen is less than 1 in 50,000. Spiegler believes that mercuric salts in concentrated acid solutions form a more delicate re-agent; his formula is as follows:—

Mercuric chloride - -	8·00 = ʒii
Tartaric acid - - -	4·00 = ʒi
White sugar - - -	20·00 = ʒv
Distilled water - -	200·00 = *f*℥vii.

This re-agent is used in the following manner:—Some of it is poured into a test-tube to the height of 1½ or 2 inches. The urine, which has been previously rendered strongly acid with concentrated acetic acid, is poured slowly and gently down the side of the test-tube. At the level when the two fluids touch, a sharp white ring forms if albumen is present; a black background renders this ring more striking. Propeptone gives this reaction, peptone does not.

The reaction occurs immediately when the amount of albumen in the urine equals or exceeds 1 in 150,000. If the amount of albumen is 1 in 225,000, the reaction takes a minute to appear.

The object of the sugar is to increase the specific gravity of the re-agent, in order to get a sharp distinction between the two layers of fluid. The use of the acetic acid is to prevent precipitation of phosphate or carbonate of mercury.—*Therapeutische Monatsheft*, 1892, No. 3.

We have found Spiegler's re-agent act exceedingly well in testing for albumen.

XIV. ON THE NUMBER OF WHITE BLOOD-CORPUSCLES FOUND IN CASES OF PNEUMONIA.

It is well known that in acute pneumonia there is a considerable increase in the number of the white corpuscles in the blood. According to Kilkodze, this increase does not occur in cases that prove fatal. Tchistovitch has further investigated these phenomena, by means of experiments on rabbits. He infected these animals with pneumonia-cocci, and found that in cases that recovered leucocytosis occurred, while in cases that proved fatal the number of white corpuscles diminished. In the former cases the number increased from 9,000 to 17,000 per cubic millimetre, in the latter it diminished from 10,000 to 3,000. The number of white corpuscles per cubic millimetre might, says Tchistovitch, prove of prognostic importance.—*Ann. de l'Institute Pasteur,* Vol. V., Part 7.

R. v. Jaksch confirms these observations. He suggests, in cases in which on examination no increase of the number of white corpuscles can be found, to give such drugs as are capable of causing an increase in the number of these cells. According to Horbaczewski such drugs are pilocarpin, antipyrin, antifebrin, and nuclein. V. Jaksch has no personal experience of the value of this mode of treatment in pneumonia; he, however, gives details of a case which shows that pilocarpin produces an increase in the number of white corpuscles in pneumonia. One-twelfth of a grain, injected subcutaneously, caused the leucocytes to increase by 62·7 per cent.—*Cbtt. f. klin. Med.*, 1892, No. 5.

XV. THE TREATMENT OF THE MORPHIN-HABIT.

Obersteiner (Vienna) contributes a paper on this subject to the *Internat. klin. Rundschau*, 1891, No. 47. He treated 21 patients, among whom were 11 doctors and one lady doctor. A cure was attained in 16 cases. One patient, just as he was successfully cured, died suddenly and unexpectedly of weakness of the heart: patients with weak hearts should not be actively treated for the morphin-habit; if any reduction is to be made in their amount of morphin, it ought to be made very carefully and gradually. If the morphin-habit has been adopted to relieve some pain or other trouble, it is quite impossible to stop the habit until the pain, &c., which was the occasion of it has been removed. There is no general scheme of treatment which will suit every case. The daily amount of morphin should not be reduced too slowly. On the other hand, the drug should not be stopped suddenly and completely. Obersteiner's plan is to reduce the amount at first quickly; when the patient has been reduced to a very small fraction of a grain for a dose, the amount is reduced more slowly. Warm baths with cold douches are useful, as also are wet packs. Alcohol is useful; bromides do but little good.

Cocain is useful; but is to be employed with the following precautions:—It should never be used, unless the patient's torments from the withdrawal of morphin are very violent; it should always be given internally, never subcutaneously. Obersteiner gives it in the following form:—

Cocaïn hydrochlorate - -	7½ grains
Salicylic acid - - -	1½ „
Water - - - -	3½ ounces

Of which one-tenth to one-fifth part is given for a dose. The amount given in twenty-four hours should never exceed 7½ grains, and the drug should never be continued for a longer period than six days, and generally not so long. When there is a tendency to vomit, cocaïn and ice are useful. If the patient becomes collapsed the morphin must be resumed.

XVI. ABDOMINAL SECTION FOR PERFORATION IN TYPHOID FEVER.

Several cases of operation for perforating typhoid ulcer have been recorded.

Dr. N. Senn records three cases (*Internat. Med. Magazine*, April, 1892):—

1. An acute perforation, secured by Lembert's suture. Death followed shortly after the operation.

2. Perforation had taken place a week before the operation, and a large suppurating cavity was found with the perforation. Death followed a few days after the operation.

3. A boy aged fourteen years, ill for five weeks; abdominal distension and great pain led to the diagnosis of perforation or obstruction of the bowels. When the abdomen was opened at least half a gallon of liquid fæcal matter and a quantity of gas was let out. No perforation could be found; Senn thinks it had become closed by adhesions. The cavity was washed and drained, and at the time of writing the boy was doing well.

Dr. Van Hook records a successful case (*Philadelphia Med. News*, Nov. 21, 1891, and *Practitioner*, Feb., 1892). A lady aged thirty-one had a light attack and recovered, but after a fortnight got a relapse, on the eighth day of which she was suddenly attacked by great pain in the ileo-cæcal region, followed by a cold sweat, coldness of the extremities, and a pinched and anxious face. Four hours later the temperature was 106° F., pulse 132, and there was tympanites, and Dr. Van Hook decided to open the abdomen. More than a pint of fluid fæces was removed from the abdomen. The perforation was found and closed by three longitudinal rows of Lembert sutures; it was about one-twelfth inch in diameter. The abdomen was washed out with sterilised water and closed up, a drainage-tube having been passed into Douglas's pouch. The following morning the belly was enormously distended and tender everywhere, and the woman seemed dying. Enemata of one ounce each of magnesium sulphate, glycerine and water, had been given every three hours, beginning two hours after the operation.

once the dose being doubled. At 11 a.m. the bowels began to act, and she had ten or twelve watery motions, after which she began to improve. From this time on everything was favourable, and after two and a half weeks the fever ended in convalescence.

XVII. ON NUTRIENT ENEMATA.

Huber studied the question as to whether enemata of eggs were absorbed, by experiments made on three persons in the hospital at Zurich. The experiments lasted thirty-six days; during the whole of this time these patients' diet was the same from day to day. On two or three occasions during this time these patients were given, for a period of four days at a time, six eggs daily in enemata. Sometimes the eggs were simply beaten up, sometimes common salt was added to them, sometimes they were peptonised. Daily analyses of the urine and fæces were made. The result of these analyses showed that when eggs simply beaten up with water were injected into the bowel, very little of the eggs was absorbed; but that absorption took place much more readily when common salt was mixed with the eggs, and when they were peptonised. Huber recommends that the bowel be first cleaned out by means of an enema of water, and that then two or three eggs mixed with salt in the proportion of 15 grains of salt to each egg be injected two or three times daily. As a change the eggs may be peptonised.—*Cbtt. f. innere Med.*, 1892, No. 7.

ABUSE OF HOSPITAL RELIEF.

The Americans, as well as the inhabitants of Great Britain, have realised how much hospital relief is abused. The following form shows how, in one case, the difficulty is being met. It may give a useful hint to the authorities of some institutions at this side of the Atlantic:—" *Ophthalmic Hospital and Dispensary, Cincinnati, O.*—It has been suggested that you are not a proper subject for treatment in this hospital. This institution is for those in poverty and distress *only*, and it will be necessary for you to furnish evidence on this blank form from some responsible party that you are a proper person for the recipiency of its charity. (Signed) ——— Executive Officer, Ophthalmic Hospital. Date, ———, 189—. ——— is known to me to be worthy of the charity offered by the above institution. (Signed) ———."

PART IV.

MEDICAL MISCELLANY.

Reports, Transactions, and Scientific Intelligence.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

President—GEORGE H. KIDD, M.D., F.R.C.S.I.
General Secretary—W. THOMSON, F.R.C.S.I.

SECTION OF PATHOLOGY.

President—C. J. NIXON, M.D.
Sectional Secretary—J. B. STORY, F.R.C.S.I.

Friday, April 1, 1892.

DR. JAS. LITTLE, and afterwards the PRESIDENT, in the Chair.

Cancer of the Stomach and Liver.

The PRESIDENT (DR. C. J. NIXON) exhibited a specimen of cancer of the pylorus with secondary implication of the liver. The case occurred in a man, aged forty, a shoemaker by trade, and the history pointed to the existence of some digestive obstruction high up in the alimentary canal. No tumour could be detected, but from the presence of cachexia, progressive emaciation, urgent vomiting, and intense anæmia, gastric carcinoma was suspected. The *post-mortem* examination revealed the existence of a tumour of the pylorus, about the size of an orange, which was adherent to the under surface of the liver. The pyloric aperture was much constricted, but there was no dilatation of the stomach. The absence of dilatation was explained by the fact that all through the patient's illness the most urgent vomiting existed, and the walls of the stomach, extending from the pylorus, were to some extent infiltrated with cancerous material. The liver presented the usual appearances of secondary carcinoma.

DR. M'WEENEY, in describing the microscopical appearances, said that pieces of the margin of the ulcer were cut out, fixed with absolute alcohol, embedded in celloidin, and cut into sections of from 10 to 15 μ in thickness with the Thoma-Jung microtome. The edge of the ulcer was found to consist of the deeper ends of the gastric glands, embedded in dense small-cell infiltrations. Below the muscularis mucosa the neoplastic tissue was discovered consisting of masses of well-formed gland tubes, lined with "high" columnar cells, disposed usually in a single layer. Sometimes the proliferation had filled up the lumen with young epithelial cells. The submucous connective tissue had undergone hypertrophy so as to form a dense stroma, in which these cancerous gland-tubes were embedded. The muscular layers were not infiltrated. The liver-sections (prepared in the same way as those of the stomach) show the liver-substance replaced here and there by patches of gland-tissue similar in character to the primary growth just described. When the cancerous nodule abuts upon the liver-substance the neoplastic tubules contain in their lumen a mass of apparently mucoid material in which are embedded numerous degenerate small cells with ternate nuclei. Elsewhere the lumen of the cancer tubules is empty. In the non-cancerous part of the section a slight amount of small-cell infiltration is traceable in the interlobular interstices; and even here one can see minute foci of glandular cancer-cells—the ancestors of the future nodule.

Painless Cancer of the Liver.

Dr. Little showed a liver weighing 178 ounces. The patient, a man forty-eight years old, had been under Dr. Little's observation for a month before death. The whole duration of his illness was only four months. The early symptoms had been chiefly symptoms which suggested disease in the stomach—namely, loss of appetite, dryness of the mouth, waterbrash, and regurgitation of food; in addition, from the beginning of his illness, the patient had suffered from drowsiness and constipation, and at the time when he came under Dr. Little's observation he was deeply jaundiced, and subsequently there was considerable effusion into the peritoneal sac.

At the *post-mortem* examination were found, in addition to a liver which constituted a beautiful specimen of the brain-like cancer, cancerous nodules in the lesser omentum, cancerous nodules in both lungs and enlargement of the mediastinal glands, and of more clinical significance, a hard growth and a deep ulcer in the rectum. Though the patient had never complained of symptoms referable to the rectum, Dr. Little considered the rectum had been the original seat of the cancerous growth, and the growths in the liver and other organs had been secondary. Cancer of the stomach was the most common starting-point of cancer of the liver, but in this case the stomach was unaffected. Dr. Murchison had ranged cancer of the liver among the painful enlargements of the liver; but in this, and in many other cases of cancer of the liver which had come under Dr. Little's observation, there was little pain, and the patient in the present case never complained of pain even when his abdomen was being examined by the class.

Dr. H. T. Bewley had examined microscopically some of the enlarged glands from the lesser omentum. The sections showed a mass of cancer, consisting of loculi, generally elongated in shape, and made of not very dense fibrous tissue, which were filled with polygonal epithelium-cells. In places there were attempts at the formation of tubular glands, but in most cases the elongated masses of cells were solid. Dr. Bewley called attention to the fact that cancers, secondary to those of the intestine, generally reproduce the tubular glands of the intestine. In this case the epithelium was polygonal in shape, and formed solid cylinders and masses. This peculiarity, he thought, was due to the very rapid growth of the cancer—the growth being even more atypical than usual. The peculiarity of the growth chiefly lay in the fact that although it was excessively hard to the touch, and therefore gave rise to the suspicion that it would prove to be a scirrhus, yet the microscopic structure was that of typical adeno-carcinoma—well-formed gland tubes with comparatively little stroma, and lined by high columnar cells, sometimes lying in several strata within the neoplastic tubule.

Human and Fowl Tuberculosis.

Dr. Parsons read a paper on human and fowl tuberculosis, which was illustrated by some recent specimens of tubercular deposits in the liver, spleen, and intestine of fowl, by microscopical sections, and also by cultures of human and avian tubercle bacilli, for which he was indebted to Professor Straus of Paris. He narrated briefly the steps by which the distinction between human and mammalian bacilli came to be gradually recognised, and gave a detailed account of the recent experiments of MM. Straus and Gamaléia, from which they concluded that, though similar in form and in their reaction towards aniline dyes, the bacilli constitute two distinct varieties. The difference in the appearance of their cultures is manifest—the maximum temperature at which the respective species grow is different; but still more striking is the pathogenic effect of the two micro-organisms. In animals, such as guinea-pigs and rabbits, to whom a small dose of either culture is fatal, there is found at the autopsy in those injected with the bacilli of human origin a generalised eruption of tubercles visible to the naked eye, while the animals inoculated with avian bacilli present no macroscopically visible tubercles. Dogs are susceptible to small doses of human bacilli, but death results from avian bacilli only after a very large injection. MM. Straus and Wurtz had previously demonstrated the impossibility of communicating tuberculosis to fowl by feeding them on phthisical sputum, and MM. Straus and Gamaléia, in their recent investigations, point out that they are likewise proof against the hypodermic injection of large quantities of pure cultures of human bacilli, while inoculation with a small amount of avian bacilli soon proves fatal. To the important question of the susceptibility of men to infection by the bacilli of fowl tuberculosis, Koch was, at the Tenth International Congress in Berlin, 1890, unable to give a positive reply.

Rhinoscleroma.

Dr. W. G. T. Story read a paper on rhinoscleroma, first described by Hebra in 1870. It is a chronic hypertrophic inflammation of the mucous and submucous tissues of the nose, mouth, pharynx and larynx, which is endemic in some countries, notably Austria and Central America; it is very chronic in its course, the inflammatory stage slowly subsiding and leaving behind it dense cicatricial tissue, which has a great tendency to contract. Both the stage of swelling and cicatricial contraction may cause stenosis of the larynx and trachea, necessitating tracheotomy or dilatation with bougies. The disease is not amenable to medicinal treatment, and though the swollen tissues are easy to cut and heal very readily, it is almost impossible to remove them *in toto*, and parts are left behind which may act as new centres.

Pathologically, the disease is characterised by a small-celled infiltration of the mucous and submucous tissues, with hypertrophy of the papillæ and thickening of the epithelium; there are also present, in the stage of infiltration, and to a less extent in that of cicatricial contraction, large spheroidal cells, first described by Mikulicz. In 1882 Frisch described a bacillus which is always to be found in these cells or lying outside them. Chiefly by the investigations of Drs. Paltauf and v. Eiselsberg in Vienna, it has been established that this micro-organism is the cause of the disease, both in the nose and in the throat, and that it may be got as a pure culture from the diseased tissue; the bacillus is very like, in its appearance and properties, the bacillus which Friedländer has described as the cause of acute croupous pneumonia, but differs from it in its behaviour as cultures on certain nutrient materials, and in its lesser virulence when inoculated into mice and guinea-pigs; like Friedländer's bacillus, it is surrounded by a capsule. Sections were shown of tissue containing the large cells of Mikulicz, and in these the bacilli were to be seen, lying enclosed in their capsules.

The Section adjourned.

SECTION OF STATE MEDICINE.

President—E. MacDowel Cosgrave, M.D.
Sectional Secretary—Ninian Falkiner, M.B.

Friday, May 6, 1892.

The President in the Chair.

Notification of Pulmonary Tuberculosis and Primary Syphilis.

Dr. Ninian Falkiner read a paper on the advisableness of adding "Pulmonary Tuberculosis" and "Primary Syphilis" to those diseases which are subject to notification.

In the case of phthisis, Dr. Falkiner recommended notification and examination of the sputum by a bacteriologist appointed and paid by the State. He stated that there were several hundred persons dying in the tenement rooms of Dublin of phthisis. He believed that if they were removed the mortality from the disease would be diminished, and that it would be possible to cope with it by a State-supported hospital in the future. He strongly urged that the Act for dealing with venereal disease should be enforced, as his experience at a city dispensary showed that there was a dangerous amount of syphilis existing among girls who were living with their parents or as domestic servants. He stated that on one occasion he saw a woman whom he had directed to be sent to the Lock Hospital, and who was saturated with the disease, handling the meat in a butcher's shop in the district.

Dr. Alfred Parsons expressed his entire concurrence with Dr. Falkiner's view that the only certain diagnosis of phthisis was to be made by a microscopical examination of the sputum, consequently the first step towards the isolation of tubercular patients must be the appointment of a public bacteriologist, whose duty it would be to examine the sputa of all suspected cases. Complete isolation, owing to the great prevalence of the disease which is answerable for about one-seventh of the total mortality, did not seem to him to be feasible, and as the greatest mischief was probably done by the expectoration of tubercular sputum on the public highways, he did not think much good would result from the compulsory isolation of patients who were so far advanced in phthisis as to be confined continually to bed. He would look rather to the education of public opinion than to legislative measures as a means of preventing infection, and trusted that the day was not far distant when an enlightened public would provide sputum receptacles in places of resort, as is the custom on the Continent, and insist on phthisical patients carrying with them small spittoons for their expectoration instead of casting it broadcast. With reference to the notification of primary syphilis, he regretted that Dr. Falkiner had confined his observations to that sex which seemed to him rather sinned against than sinning. He strongly deprecated the introduction of any measures which would pander to a lax public morality, or minimise the risk attached to a wilful and avoidable transgression of nature's laws. He hoped that if notification of primary syphilis ever became compulsory, it would refer equally to each sex.

Dr. C. F. Moore said Dr. Stokes dwelt on the frequency of infection of the wife from the husband and the reverse in his lectures at the Meath Hospital. In addition to separation of the infected, the prevention of phthisis by better drainage of the surface, as seen in the case of Salisbury, ought to be striven for. The carriage of phthisical sputa in a dry state may be one reason why phthisis is found not uncommonly in a dry country like Egypt. The occurrence of phthisis in parts of Ireland where the surface is damp or the dwellings of the people demands attention. In certain garrison towns, as Valetta and Hong-Kong, separation of the unfortunate class of females is or was carried out. The reinforcement of the Contagious Diseases Act would be a most important and valuable measure.

Dr. J. W. Moore agreed with the author of the paper that both tuberculosis and primary syphilis, being infectious diseases, should be liable to notification under the Notification of Infectious Diseases Act. Unfortunately, however, that Act was permissive—not compulsory, and at present there was endless confusion owing to the adoption of the provisions of the Act in some districts and its non-adoption in others. Dr. Moore instanced the existing unsatisfactory distribution of notification in Dublin and its suburbs—the Act was in force in the city and in the Pembroke township, it was not in force in the Rathmines district. He had also reason to know that even in the city, notification was very incompletely carried out. For example, in 1891, only 20 per cent. of the cases of enteric fever which occurred in Dublin city were notified. It was now proposed to add tuberculosis and primary syphilis to the list of notifiable diseases, while the Corporation had just arranged so to add measles and whooping-cough. This was all quite right, provided notification was insisted upon, and the penalties for non-compliance with the Act were enforced. Dr. Falkiner suggested that a recommendation should be made to the Local Government Board for Ireland to make tuberculosis and syphilis notifiable, but the Act left the question to the local sanitary authorities—not to the Local Government Board.

Mr. Montgomery considered that the present state of the Act as regards syphilis is very unfortunate, as any young man coming up from the country is at once pounced upon by some of those miserable creatures. Some time back the Act was in full force and acted well. One strong objection was that sometimes respectable females, innocent, were interferred with. As to tuberculosis, it was doubtful whether it should be notified, as it might lead to much annoyance by separation from families.

Mr. Edgar Flinn thanked Dr. Falkiner for his paper. Possibly, as

Dr. Moore said, Dr. Falkiner had brought on the question of the necessity of the notification of tuberculosis and syphilis prematurely, but in doing so he showed his desire to see a much needed reform added to the notification of diseases without delay. The Notification of Diseases Act was much too permissive in its character, and if the Bill now before Parliament of Local Government for Ireland passed in its present form, the grievance they all so much complained of would be made much worse in so far as notification was concerned. Tuberculosis and syphilis were just as necessary to be notified as the other scheduled diseases.

The PRESIDENT (Dr. MacDowel Cosgrave) suggested that if primary syphilis had to be notified, men might be likely to hide their disease and not apply for treatment, and the chief part of the cases notified would be those where the sufferer did not know the nature of the disease. Statistics are certainly required of phthisical cases, but it would be hard to get these by notification, as the same case might be notified time after time by different practitioners. The difficulty of segregating cases is almost insurmountable. Not only is it hard to separate cases in their homes, but early cases, still able to work, must spread the disease in stuffy workshops, and yet they cannot be kept from working.

Some Modern Methods of Sewage Treatment.

MR. EDGAR FLINN read a paper on "Some Modern Methods of Sewage Treatment." [It will be found in Vol. XCIII., page 476.]

PROFESSOR CHARLES TICHBORNE said that Mr. Flinn's paper was of great interest, because it brought before them the various processes which had lately been tried for sewage treatment. The great difficulty of all methods of sewage disposal was that this difficulty grew directly as the size of the town they had to deal with. Therefore every town required its special treatment, and he did not believe that any universal system was applicable. Some years ago he, the speaker, had been taken by Mr. Dibdin, Chemist to the Metropolitan Board, to see the method adopted at London. The process at that time was a very simple one. It consisted in carrying down the sewage by two main sewers into settling tanks, pumping the effluent into the river, and taking away the sludge by steam barges and emptying it into the sea. He was told that even at that time the great difficulty they had to contend with was to dispose of the sedimentary sludge quick enough. How much greater would that be with the monster city where they were using precipitants. The effluent presented no difficulty. A small proportion of manganate of sodium was added before pumping for the purpose of destroying effluvia. The interesting process mentioned by Mr. Flinn, in which magnetic oxide of iron played so important a part, seemed to Prof. Tichborne to be based on a similar theory to the porous iron filters which had been found so successful. There was nothing new about the use of manganates and permanganates for sewage purification. He should like to hear how far the irrigation system was carried out at Birmingham. Birmingham was a very large town, and if Mr. Flinn could tell them something about that, it would be very interesting.

Dr. Alfred Parsons regretted that Mr. Flinn had devoted such a large part of his paper to an account of the chemistry of the methods of sewage treatment, while the bacteriological aspect of the question had been dismissed in a few brief sentences. To him the latter seemed to be the all-important side of the subject. He yielded to none in his respect for the science of chemistry. It had had a glorious record in the past, and there was a brilliant future before it, but he maintained that the value of any method of sewage treatment must be weighed in the balance of bacteriology and not chemistry. Numerous opinions of distinguished chemists, from Sir Henry Roscoe to Professor Adeney, had been laid before them, and the most they appeared able to say of any system was that the effluent was colourless, tasteless, odourless, but a fluid, he believed, might possess these characters and yet contain large numbers of typhoid bacilli. A liquid, swarming with pathogenic organisms, which from its odour, taste, and appearance is repulsive, is likely to do less injury than a fluid containing similar organisms, but commendable from fulfilling those criteria on which the chemists appear to lay so much stress. Till an exhaustive bacteriological examination of the fluid after precipitation has been made, he must look with great suspicion on any method of treatment in which the effluent is poured into superficial drains which in their course may contaminate many sources of water supply. The use of the sludge for manuring vegetables appeared to him likewise to be fraught with danger, and it did not seem to him to require any vivid imagination—in the absence of any information in the paper of the bactericidal properties of the substance used in the process of precipitation—to understand how typhoid fever might be propagated by the minute particles adhering to imperfectly washed, uncooked vegetables such as lettuce, assuming the presence of typhoid dejecta in the original sewage matter.

Dr. Charles Moore—I would ask Mr. Flinn what is the "Shone System," and if it can be carried out in detail without forming the great aggregate of sewage now so generally the result of main drainage systems. The great difficulty of such systems is the vast amount of liquid matter that has to be dealt with. The prevention of contamination of sewers by the matter from the 80 slaughter yards about Dublin and from other well-known sources of contamination should be carried. The pumping of the surface water by the old pumps of Dublin was an important measure of prevention of many diseases—as phthisis, &c. The larger the system of main drainage the less surface drainage—pumping by steam works.

Dr. MacDowel Cosgrave asked for the comparative expense of the Shone process.

Mr. Flinn replied.

The Section then adjourned.

CLINICAL RECORDS.

Thrombosis and Embolism in Fatty Heart: Use of a Valuable Stimulant.

By W. Langford Symes, Kiltegan.

Of equal rarity, interest, and danger, the following notes may help to illustrate an untoward event which will sometimes be found to happen in the course of cases of heart disease, though happily more frequently heard of than seen. In vegetative valvulitis, especially of the aortic orifice, one is naturally mindful of the possible occurrence of embolism at any moment, but when no valvular disease exists, or is clinically inappreciable, such occurrences are very infrequent, their origin in fibrination depending upon vital conditions which are very rapidly fatal or only recovered from under the most prompt and heroic remedies. Aid is, however, so seldom at hand that such cases usually reach us as instances of "sudden death," or are exhibited as pathological specimens of "*ante-mortem* clot." Of such nature was the following case:—

Case.—A spare, feeble man, of about forty-five, consulted me for great "weakness," fainting on exertion, inability to walk up a hill, or even much on the level; coldness of the extremities, headaches, and difficulty in breathing. On examination there was evidence of fatty metamorphosis of the heart, with sounds very weak and "clicky," and the impulse very faint, but no *bruit* over any of the valvular areas. He suffered from advanced anæmia.

For some time he was able to walk to see me, and his condition was much improved by a mixture of—

℞. Ferri et ammon. citrat.;
Ammonii iodidi;
Liquoris arsenicalis;
Liquoris strychninæ;

with a liberal nutritious dietary and gentle exercise in the open air. His occupation was that of a night watchman, but this he was frequently obliged to relinquish owing to his health. He now unfortunately contracted an acute bronchitis, which was with great difficulty prescribed for owing to the weak condition of his heart muscle not admitting of suitable antiphlogistic remedies. This much aggravated his condition, and produced great dyspnœa. Eventually it was removed and he again recovered, having, however, some hypostatic congestion in the bases of his lungs. Examining his chest one day as he lay in bed—having found for the first time a murmur over the pulmonary area—I gently sat him up to examine his back, propping him carefully with pillows, while his wife held him at the opposite side. I did not hear him breathe, and on again telling him to take a full breath, no air entered the base of his lungs. On looking at his face I was horrified to find that he was perfectly white, and, to all appearances, dead. We at once laid him back and held him up by the heels, applied mustard to his heart, epigastrium, arms, and legs, gave him several hypodermics of ether; but although his wife poured some brandy into his mouth, and his lips were freely sprinkled with liquor ammon. fortior (which he always had at hand), he did not breathe. There was no pulse, no sound over his heart, no respiration; his eyes were glassy and fixed; he could not swallow, and severe slapping of the epigastrium had no effect. Having exhausted all available stimulants, and recollecting that I had read somewhere of the value of a hot spoon applied to the epigastrium in states of asphyxia or syncope, I took a hot lump of coal from the fire with the tongs, and applying it over the xiphoid cartilage once or twice, was gratified to find it produce powerful contractions of the inspiratory muscles. This was kept up severely around the insertion of the diaphragm until, by degrees, respiration returned, his eyes opened, his heart beat, and the colour came back to his face. He then took some brandy, and finally rallied.

Next day he complained of great pain in the left thigh, the inner side of which was acutely tender, most marked in the middle third. The limb was cold, and there was considerable loss of sensation, with inability to move the leg freely. A hard, knotty, cord-like condition was felt over the vessels, in the neighbourhood of the profunda femoris artery, very closely resembling that found in phlebitis. There was no œdema, but, on the contrary, the leg was small and blanched. With poppy fomentations, flannel bandages, and hot jars the pain was relieved, and collateral circulation encouraged; and after a considerable lapse of time he regained its use completely, finally recovering sufficiently to resume occupation, but of a much milder nature.

Since healthy blood, freely propelled through healthy vessels by a healthy heart, will not coagulate, any disturbance of this equilibrium, whether *cardiac*, *vascular*, or *hæmic*, may readily produce thrombosis, and this is even more serious when affecting the vessels of the venous and pulmonary than those of the systemic circulation.

Although the intimate relations between coagulation and its immediate cause is still an unsettled point, the most modern pathologists agree that some minute endothelial change of structure is a necessary antecedent in all cases, even those where a hæmic influence is most at work. Thus, where the blood is primarily affected (cf. pyæmia, the puerperal state, &c.), there must be some peculiarity of structure or function in that part of the vessel at which fibrination takes place—some physiological affinity between the endothelium and fibrin factors which induces this deposition. Feebleness of the circulation, from a weak propelling power, is, however, amongst its powerful predisposing causes, cardiac thrombosis commonly occurring shortly before death. Here some blood remains almost stagnant in the half-emptied auricular appendix or apex of the ventricle, where, should the structure of the intima present any abnormality, gradual deposition of fibrin takes place, a so-called "cardiac polypus" forms, and this, unless detached to plug some distant vessel, may suddenly occlude an orifice and produce instantaneous asystole. This was evidently the case in the instance cited, and the difficulty in dislodging the thrombus was only exceeded by the anxiety of the moment, and the remorse that I had caused it myself.

Of these globular *ante-mortem* clots, or cardiac polypi, an interesting specimen, hanging from the left auricle, is beautifully depicted by Dr. Norman Moore in his "Pathological Anatomy of Diseases."

That fatty metamorphosis of the heart, without appreciable valvular disease, thus induces thrombus in its cavities by a *structural* instead of an *adynamic* process, is a matter easily accepted. The degeneration is essentially structural when once set a-going by the dire influence of malnutrition, and although the only conclusive proof of its pathological existence is microscopic evidence that the muscular discs have been replaced by fat granules, with chemical change of the cell protoplasm, the heart may be so altered in advanced cases as to present to the naked eye the appearances of paleness, friability, or the peculiar transverse "zig-zag" markings with light bands, frequently found on the carneæ columnæ and musculi papillares of the mitral curtains—the so-called "tabby-cat striation."

Thus, from want of evidence to the contrary, we believe that slowing of the blood-current from weakness of the heart is a subsidiary factor, and the constant antecedent of coagulation while the blood is flowing is some change in the intima of the vessel. On this point most modern pathologists are now agreed in the case of thrombus in a vessel, and similarly we may take cardiac thrombi in a fatty heart as the direct outcome of structural changes in its lining membrane, frequently apparent even to the naked eye.

We know that certain conditions of the blood favour the formation of thrombi—*e.g.*, anæmia, fevers and wasting diseases, septicæmia, cachectic or "marantic" (Virchow) states, &c., but here again we have no evidence that the *modus operandi* of these conditions is other than a capillary interference with the nutrition and vitality of the vessel at some particular point. Even extreme passive congestion, or stagnation, in veins, is now believed to favour coagulation by interfering in the first instance with the nutrition of the vessel wall.

Thus, as soon as perverted endothelial function is succeeded by alteration in its structure, so soon does the mysterious vital equilibrium between the blood and its containing "tunica intima" become disturbed at a given point, and thus arises the main factor in the production of all coagula. The initial steps in the next stage of the process are, according to one noted physiologist (Bizzozero), now taken by the "blood plaques," or elementary blood corpuscles, but thus far only can we safely speculate in the present state of our pathology.

The murmur heard immediately before the accident over the pulmonary area was, I believe, due to coagulation in the left auricular appendix, since it was never previously detected.

In a lecture delivered at St. Bartholomew's Hospital in June, 1890, Sir Dyce Duckworth cites an almost parallel case of embolism of the profunda femoris, followed by aneurysm and fatal rupture of the sac into the tissues of the thigh. This patient had, however, advanced aortic patency, the embolism occurring on the 10th day after admission, and the vessel bursting 21 days later, proving fatal in 11 hours. Here also it closely simulated thrombosis of the saphena vein, but there was no œdema of the leg.

Should the wonderful value of such a simple, powerful, and ever-available stimulant be recognised from these notes, the chief object in their publication will have been achieved, and some future lives perchance similarly saved.

MEDICAL EDUCATION IN THE UNITED STATES.

THAT a two years' course of medical study should be considered sufficient training for a physician, anywhere, at this time of day, is amazing. We watch with great interest the gradual disappearance of such an opinion in the United States. We learn from the *Journal of the American Medical Association* that the Supreme Court of Oregon had decided in favour of at least a three years' course. The State Board of Health of that State had defined "a medical institution in good standing" to be a school requiring "three regular courses or sessions, of six months each, extending over a period of three years' time;" and refused a qualification to practise in the State to one Barwood, who had not fulfilled the condition. On appeal the Supreme Court decided that the Board of Health had power to make such a rule. It is scarcely credible that in St. Louis, with a population of nearly 200,000, the three medical schools—the College of Physicians and Surgeons, the Marion-Sims Medical College, and the Beaumont College—are content with a two years' course of study! It is expected, however, that before the year ends, three years' study will be enforced in three-fifths of the States.

SANITARY AND METEOROLOGICAL NOTES.

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VITAL STATISTICS

For four Weeks ending Saturday, July 16, 1892.

The deaths registered in each of the four weeks in the sixteen principal Town Districts of Ireland, alphabetically arranged, corresponded to the following annual rates per 1,000:—

Towns	Weeks ending				Towns	Weeks ending			
	June 25.	July 2.	July 9.	July 16.		June 25.	July 2.	July 9.	July 16.
Armagh -	42·0	42·0	0·0	21·0	Limerick -	22·5	14·0	9·8	18·2
Belfast -	28·3	25·7	22·4	22·8	Lisburn -	21·4	17·1	21·3	25·5
Cork -	15·9	27·0	15·9	28·4	Londonderry	29·8	15·7	15·7	18·8
Drogheda	13·2	48·4	13·2	43·9	Lurgan -	9·1	18·2	27·4	45·6
Dublin -	27·0	23·9	21·3	23·4	Newry -	20·1	16·1	28·2	20·1
Dundalk -	16·8	16·8	0·0	8·4	Sligo -	15·5	10·3	25·4	25·4
Galway -	3·8	30·2	15·1	11·3	Waterford -	17·5	35·0	20·0	15·0
Kilkenny	28·3	14·2	9·4	51·9	Wexford -	18·1	13·5	9·0	36·1

In the week ending Saturday, June 25, 1892, the mortality in thirty-three large English towns, including London (in which the rate was 17·3), was equal to an average annual death-rate of 17·3 per 1,000 persons living. The average rate for eight principal towns of Scotland was 19·3 per 1,000. In Glasgow the rate was 21·1, and in Edinburgh it was 17·5.

The average annual death-rate represented by the deaths registered during the week in the sixteen principal town districts of Ireland was 24·9 per 1,000 of the population (unrevised) according to the recent Census.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 3·4 per 1,000, the rates varying from 0·0 in eleven of the districts to 10·3 in Sligo—the 3 deaths from all causes registered in that district comprising 1 from simple continued fever and 1 from diarrhœa. Among the 139 deaths from all causes registered in

Belfast are 17 from measles (an increase of 4 as compared with the number for the preceding week), 2 from whooping-cough, and 3 from diarrhœa. The 23 deaths in Cork comprise 1 from measles and 2 from typhus.

In the Dublin Registration District the registered births amounted to 204—98 boys and 106 girls; and the registered deaths to 184—95 males and 89 females.

The deaths, which are 27 over the average number for the corresponding week of the last ten years, represent an annual rate of mortality of 27·4 in every 1,000 of the population. Omitting the deaths (numbering 3) of persons admitted into public institutions from localities outside the district, the rate was 27·0 per 1,000. During the first twenty-five weeks of the current year the death-rate averaged 35·3, and was 5·5 over the mean rate in the corresponding period of the ten years 1882–1891.

Thirty-four deaths from zymotic diseases were registered, being 17 over the average for the 25th week of the last ten years, but 2 under the number for the preceding week. They comprise 24 from measles (showing a decrease of 3 as compared with the number from that cause for the preceding week), 1 from influenza and its complications, and 5 from whooping-cough.

The number of cases of measles admitted to hospital is 31, being a decline of 8 as compared with the admissions for the preceding week, and 19 under the number for the week ended June 11. Fifty-eight measles patients were discharged, 3 died, and 80 remained under treatment on Saturday, being 30 below the number in hospital at the close of the preceding week.

Fourteen cases of enteric fever were admitted to hospital, against 11 for the preceding week: 3 patients were discharged, 1 died, and 44 remained under treatment on Saturday, being 10 over the number in hospital at the close of the preceding week.

The hospital admissions for the week include, also, 5 cases of scarlatina and 2 of typhus: 15 cases of the former and 5 of the latter disease remained under treatment in hospital on Saturday.

Thirty-two deaths from diseases of the respiratory system were registered, being 10 over the number for the preceding week, and 7 in excess of the average for the 25th week of the last ten years. They comprise 15 from bronchitis and 11 from pneumonia or inflammation of the lungs.

In the week ending Saturday, July 2, the mortality in thirty-three large English towns, including London (in which the rate was 16·9), was equal to an average annual death-rate of 17·1 per 1,000 persons living. The average rate for eight principal towns of Scotland was 18·0 per 1,000. In Glasgow the rate was 20·3, and in Edinburgh it was 16·1.

The average annual death-rate in the sixteen principal town districts

of Ireland was 24·0 per 1,000 of the population (unrevised) according to the recent Census.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 3·4 per 1,000, the rates varying from 0·0 in eleven of the districts to 12·1 in Newry—the 4 deaths from all causes registered in that district comprising 3 from measles. Among the 126 deaths from all causes registered in Belfast are 21 from measles (an increase of 4 as compared with the number for the preceding week), 1 from typhus, 2 from whooping-cough, 1 from diphtheria, 1 from simple continued fever, and 3 from diarrhœa. The 10 deaths in Limerick comprise 1 from whooping-cough and 1 from simple continued fever. The Registrar of Castlereagh No. 1 District (Belfast) remarks:—"The epidemic of measles still continues, no portion of district exempt."

In the Dublin Registration District the registered births amounted to 220—113 boys and 107 girls; and the registered deaths to 165—89 males and 76 females.

The deaths, which are 3 below the average number for the corresponding week of the last ten years, represent an annual rate of mortality of 24·6 in every 1,000 of the population. Omitting the deaths (numbering 5) of persons admitted into public institutions from localities outside the district, the rate was 23·9 per 1,000. During the first twenty-six weeks of the current year the death-rate averaged 34·9, and was 5·3 over the mean rate in the corresponding period of the ten years 1882–1891.

Twenty-nine deaths from zymotic diseases were registered, being 8 over the average for the 26th week of the last ten years, but 5 under the number for the week ended June 25. They comprise 20 from measles (showing a decrease of 4 as compared with the number from that cause for the preceding week), 2 from influenza and its complications, 1 from whooping-cough, 1 from enteric fever, and 1 from diarrhœa.

The number of cases of measles admitted to hospital is 17, being a decline of 14 as compared with the admissions for the preceding week, and 22 under the number for the week ended June 18. Forty-one measles patients were discharged and 56 remained under treatment on Saturday, being 24 under the number in hospital at the close of the preceding week.

Only 6 cases of enteric fever were admitted to hospital, against 14 for the preceding week—11 patients were discharged and 39 remained under treatment on Saturday, being 5 below the number in hospital at the close of the preceding week.

The hospital admissions for the week include, also, 3 cases of scarlatina, but no cases of typhus were received: 14 cases of the former and 4 of the latter disease remained under treatment in hospital on Saturday.

Only 20 deaths from diseases of the respiratory system were registered, being 12 below the number for the preceding week and 4 under the average for the 26th week of the last ten years. They comprise 14 from bronchitis, 3 from pneumonia or inflammation of the lungs, and 1 from croup.

In the week ending Saturday, July 9, the mortality in thirty-three large English towns, including London (in which the rate was 17·2), was equal to an average annual death-rate of 17·1 per 1,000 persons living. The average rate for eight principal towns of Scotland was 17·6 per 1,000. In Glasgow the rate was 20·6, and in Edinburgh it was 14·7.

The average annual death-rate represented by the deaths registered in the sixteen principal town districts of Ireland was 19·7 per 1,000 of the population based on the Census of 1891.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 3·2 per 1,000, the rates varying from 0·0 in eight of the districts to 13·7 in Lurgan—the 6 deaths from all causes registered in that district comprising 3 from measles. Among the 110 deaths from all causes registered in Belfast are 15 from measles (a decrease of 6 as compared with the number for the preceding week), 1 from simple continued fever, 1 from enteric fever, and 5 from diarrhœa. The 23 deaths in Cork comprise 1 from measles and 2 from typhus. Of the 10 deaths in Londonderry 1 was caused by whooping-cough and 1 by enteric fever. Of the 7 deaths in Newry 2 resulted from whooping-cough.

In the Dublin Registration District the registered births amounted to 171—82 boys and 89 girls; and the registered deaths to 146—65 males and 81 females.

The deaths, which are 3 under the average number for the corresponding week of the last ten years, represent an annual rate of mortality of 21·8 in every 1,000 of the population. Omitting the deaths (numbering 3) of persons admitted into public institutions from localities outside the district, the rate was 21·3 per 1,000. During the first twenty-seven weeks of the current year the death-rate averaged 34·4, and was 5·1 over the mean rate in the corresponding period of the ten years 1882–1891.

Twenty-four deaths from zymotic diseases were registered, being 8 over the average for the 27th week of the last ten years, but 5 below the number for the week ended July 2. They comprise 13 from measles (showing a decrease of 7 as compared with the number from that cause in the preceding week), 2 from whooping-cough, 1 from diphtheria, 1 from enteric fever, 2 from diarrhœa, and 1 from dysentery.

The number of cases of measles admitted to hospital is 18, being 1 over the admissions for the preceding week, but 13 under the number for the week ended June 25. Sixteen measles patients were discharged, 1 died, and 57 remained under treatment on Saturday, being 1 over the number in hospital at the close of the preceding week.

Six cases of enteric fever were admitted to hospital, being equal to the number for the preceding week. Six patients were discharged, 1 died, and 38 remained under treatment on Saturday, being 1 under the number in hospital at the close of the preceding week.

The hospital admissions for the week include, also, 1 case of scarlatina and 2 cases of typhus: 13 cases of the former and 6 of the latter disease remained under treatment in hospital on Saturday.

Twenty-eight deaths from diseases of the respiratory system were registered, being 8 over the number for the preceding week, and also 8 in excess of the average for the 27th week of the last ten years. They consist of 14 from bronchitis, 12 from pneumonia or inflammation of the lungs, and 2 from croup.

In the week ending Saturday, July 16, the mortality in thirty-three large English towns, including London (in which the rate was 18·9), was equal to an average annual death-rate of 17·9 per 1,000 persons living. The average rate for eight principal towns of Scotland was 17·2 per 1,000. In Glasgow the rate was 18·3, and in Edinburgh it was 14·1.

The average annual death-rate in the sixteen principal town districts of Ireland was 23·7 per 1,000 of the population according to the Census of 1891.

The deaths from the principal zymotic diseases registered in the sixteen districts were equal to an annual rate of 3·0 per 1,000, the rates varying from 0·0 in Limerick, Galway, Lisburn, Wexford, and Armagh, to 15·2 in Sligo—the 5 deaths from all causes registered in the last-named district comprising 3 from diarrhœa. Among the 112 deaths from all causes registered in Belfast are 13 from measles (a decrease of 2 as compared with the number for the preceding week), 2 from diphtheria, and 5 from diarrhœa. The 41 deaths in Cork comprise 4 from measles, 1 from enteric fever, and 1 from diarrhœa. Among the 10 deaths in Drogheda are 2 from typhus. The 11 deaths in Kilkenny comprise 1 from each of the following diseases:—Simple continued fever, enteric fever, and diarrhœa.

In the Dublin Registration District the registered births amounted to 180—95 boys and 85 girls; and the registered deaths to 162—91 males and 71 females.

The deaths, which are 19 over the average number for the corresponding week of the last ten years, represent an annual rate of mortality of 24·2 in every 1,000 of the population. Omitting the deaths (numbering 5) of persons admitted into public institutions from localities outside the district, the rate was 23·4 per 1,000. During the first twenty-eight weeks of the current year the death-rate averaged 34·0, and was 5·0 over the mean rate in the corresponding period of the ten years 1882–1891.

Nineteen deaths from zymotic diseases were registered, being equal to the average for the 28th week of the last ten years, but 5 below the number for the week ended July 9. They comprise 9 from measles (showing a decline of 4 as compared with the number from that cause in the preceding week); 4 from enteric fever; and 1 from erysipelas.

The number of cases of measles admitted to hospital is 20, being 2 over the admissions for the preceding week: 24 measles patients were discharged, and 53 remained under treatment on Saturday, being 4 under the number in hospital at the close of the preceding week.

Seven cases of enteric fever were admitted to hospital, against 6 admissions in the preceding week. Eight patients were discharged, 1 died, and 36 remained under treatment on Saturday, being 2 under the number in hospital on Saturday, the 9th of July.

The hospital admissions for the week include, also, 1 case of scarlatina and 1 case of typhus: 14 cases of the former and 5 of the latter disease remained under treatment in hospital on Saturday.

The number of deaths from diseases of the respiratory system registered is 27, being 5 in excess of the average for the 28th week of the last ten years, but 1 under the number for the week ended July 9. The 27 deaths comprise 15 from bronchitis, 9 from pneumonia or inflammation of the lungs, 1 from croup, and 1 from pleurisy.

METEOROLOGY.

Abstract of Observations made in the City of Dublin, Lat. 53° 20′ *N., Long.* 6° 15′ *W., for the Month of July,* 1892

Mean Height of Barometer,	30·019 inches.
Maximal Height of Barometer (on 24th, at 9 a.m.),	30·370 ,,
Minimal Height of Barometer (on 6th, at 4 30 p.m.)	29·420 ,,
Mean Dry-bulb Temperature,	57·2°.
Mean Wet-bulb Temperature,	54·3°.
Mean Dew-point Temperature,	51·6°.
Mean Elastic Force (Tension) of Aqueous Vapour,	·382 inch.
Mean Humidity,	82·1 per cent.
Highest Temperature in Shade (on 6th)	70·8°.
Lowest Temperature in Shade (on 21st),	46·6°.
Lowest Temperature on Grass (Radiation) (on 10th),	41·1°.
Mean Amount of Cloud,	66·0 per cent.
Rainfall (on 12 days),	1·052 inches.
Greatest Daily Rainfall (on 15th),	·610 inch.
General Directions of Wind,	N.E., N.W.

Remarks.

A changeable, squally, showery but by no means wet month, of very low mean temperature and deficient rainfall, with a great preponderance of north-easterly and north-westerly winds.

In Dublin the arithmetical mean temperature (57·8°) was decidedly below the average (60·6°); the mean dry bulb readings at 9 a.m. and 9 p.m. were 57·2°. In the twenty-seven years ending with 1891, July was coldest in 1879 (the "cold year") (M. T. = 57·2°). It was warmest in 1887 (M. T. = 63·7°), and in 1868 (the "warm year") (M. T. = 63·5°). In 1886 the M. T. was 61·0°; in 1888 it was as low as 57·3°; in 1889 it was 58·7°; in 1890 it was 58·1°; and in 1891 it was 59·0°. From this, 1887 proves to have been the warmest since the present records commenced, whilst July, 1879 was the coldest. In only 2 years since 1864 was July colder than in the present year.

The mean height of the barometer was 30·019 inches, or 0·104 inch above the corrected average value for July—namely, 29·915 inches. The mercury marked 30·370 inches at 9 a.m. of the 24th, and fell to 29·420 inches at 4 30 p.m. of the 6th. The observed range of atmospherical pressure was, therefore, 0·950 inch—that is, a little less than an inch.

The mean temperature deduced from daily readings of the dry bulb thermometer at 9 a.m. and 9 p.m. was 57·2°, or 0·7° above the value for June, 1892. Using the formula, *Mean Temp. = Min.* + (*max.—min.* × ·465), the value was 57·3°, or 2·9° below the average mean temperature for July, calculated in the same way, in the twenty-five years, 1865–89, inclusive (60·2°). The arithmetical mean of the maximal and minimal readings was 57·8°, compared with a twenty-five years' average of 60·6°. On the 6th the thermometer in the screen rose to 70·8°—wind, S.W.; on the 21st the temperature fell to 46·6°—wind, N.W. The minimum on the grass was 41·1° on the 10th.

The rainfall was 1·952 inches, distributed over 12 days. The average rainfall for July in the twenty-five years, 1865–89, inclusive, was 2·420 inches, and the average number of rainy days was 17·2. The rainfall, therefore, was considerably below the average, while the rainy days were also much below it. In 1880 the rainfall in July was very large—6·087 inches on 24 days; in 1871 also 4·391 inches fell on 28 days. On the other hand, in 1870, only ·539 of an inch was measured on 8 days; in 1869 the fall was only ·739 of an inch on 9 days; and in 1868 only ·741 of an inch fell on but 5 days.

High winds were noted on 10 days, and attained the force of a fresh or moderate gale on three occasions—viz., the 6th, the 9th, and the 19th. Temperature reached or exceeded 70° in the screen on only 2 days. In July, 1887, temperature reached or exceeded 70° in the screen on no fewer than 17 days. In July, 1888, the maximum was only 68·7°. In

July, 1891, maxima of 70° were reached on only 3 days. Distant thunder was heard on the 3rd. A fog occurred on the 30th.

The first two days of the month were warm but changeable.

Exceedingly unsettled, blustering, showery weather held throughout the week ended Saturday, the 9th. A succession of depressions of ever increasing intensity travelled north-eastwards along the Atlantic shores of the north-west of Europe. At first barometric gradients were not steep, so that the winds were not high, but very heavy showers, accompanied by thunder and lightning, were felt in most parts of the United Kingdom. This was particularly the case on Sunday. In Dublin, Monday and Tuesday proved fine, although the wind freshened considerably at times. Wednesday and Thursday were still more blustering, but only a few showers of rain fell in the city. At 8 a.m. of the latter day the barometer readings ranged from 30·13 inches over France and Germany to 28·96 inches in the Shetlands. Needless to say that a moderate or fresh W.S.W. gale was felt at many exposed stations in the British Islands. Friday was again showery and squally, but the evening turned out very fine. Splendid rainbows were seen between 5 20 and 8 p.m.. On Saturday a new system of low pressure advanced across Ireland from S.W., resulting in a downpour of rain and fresh S.E. to S.W. winds, and finally a gale from N.W. In Dublin the mean hight of the barometer was 29·769 inches, pressure oscillating between 29·420 inches at 4 30 p.m. of Wednesday (wind, W.S.W.), and 29·962 inches at 9 p.m. of Friday (wind, W.). The corrected mean temperature was 58·7°. The mean dry bulb temperature at 9 a.m. and 9 p.m. was only 56·7°. The screened thermometers rose to 70·8° on Wednesday, having fallen to 49·3° on Monday. The rainfall was ·782 inch on 6 days, ·280 inch being registered on Sunday and ·340 inch on Saturday. The mean direction of the wind was westerly. There were gales on Wednesday and Saturday. Thunder and lightning occurred at Bray on Sunday.

Cool, cloudy, changeable weather held during the greater part of the week ended Saturday, the 16th, Sunday being a notable exception, and proving a bright summer's day. The period was especially characterised by an unusual prevalence of easterly winds for July. These were, however, of cyclonic origin, so that the atmosphere was damp and the sky was heavily charged with clouds, which shut out the sunshine of midsummer to a great extent. During the week two main depressions passed across the British Islands in a east-north-easterly direction. In front of the first of these systems, calms and clear bright weather prevailed in Ireland on Sunday. In the afternoon there was remarkable visibility, the whole range of the Mourne Mountains being plainly, and that of the Welsh Mountains being dimly, seen from the slopes of the Dublin and Wicklow hills. In the interval between Monday and Thursday a depression passed across Ireland, England, and the North Sea to Denmark, causing easterly winds, clouds, and rain, with thunder in places. Then came another brief spell of fine, quiet weather, followed by a new depression and much rain on Friday night. Saturday was a dull, bleak day on the east coast of Ireland. In Dublin the mean height of the barometer was 29·851 inches, pressure varying between 30·084 inches at 9 a.m. of Sunday (wind, N.W.), and 29·605 inches at 9 p.m. of Tuesday (wind, N.E.). The corrected mean temperature was only 55·3°. The mean dry bulb readings at 9 a.m. and 9 p.m. were only 55·4°. The thermometers in the screen fell to 46·9° on Sunday, and rose to 62·7° on Monday. The rainfall was ·961 inch on three days, ·610 inch being referred to Friday. The prevailing winds were S.E. and N.E.

The weather during the week ended Saturday, the 23rd, although cloudy, dull, and cool for the most part, and at one time (on Tuesday) stormy, was much less unfavourable than in recent weeks. Towards the close an anticyclone became fairly established over the British Islands, and on Saturday after a dull morning a brilliant afternoon was enjoyed. During the first two days gradients for polar winds held throughout the N.W. of Europe, and on Sunday a heavy fall of rain took place over the greater part of England. The most striking feature in the meteorology of the week, however, was a cyclonic system which appeared off the N. of Scotland early on Tuesday morning and thence travelled rapidly down the east coast of Great Britain to Belgium, which it reached on Wednesday morning. This disturbance caused heavy rains in Great Britain and fresh to strong N.W. and N. gales in nearly all parts of the United Kingdom. Comparatively little rain fell in Ireland, while the depression was passing, but the storm was severe on exposed parts of the Irish coasts. An anticyclone spread in from the Atlantic on Thursday and held to the end of the week. It was accompanied by light variable, chiefly northerly, winds and calms. At first the sky was densely clouded; but bright sunshine set in on Saturday afternoon. In Dublin the mean height of the barometer was 30·150 inches, pressure ranging from 29·773 inches about 2 p.m. of Tuesday (wind, N.W.) to 30·348 inches at 9 p.m. of Saturday (wind, calm.) The corrected mean temperature was 56·3°. The mean dry bulb temperature at 9 a.m. and 9 p.m. was 56·4° On Friday the thermometers in the screen rose to 64·0° ; on Thursday they fell to 46·6°. The rainfall amounted to ·106 inch, of which ·101 inch was referred to Monday, the only "rainy day." The prevailing winds were northerly (N.W. to N.E.). Temperature rose considerably during the daytime in England on Friday.

Very uneventful did the weather of the week ended Saturday, the 30th, prove in Ireland. The anticyclone, which had spread in from the Atlantic on Thursday, the 21st, held throughout the period now under review. Hence fine, quiet weather prevailed in all districts for the most part. The atmosphere, however, was extremely hazy and the amount of cloud was particularly great, more especially on the eastern seaboard of both Great Britain and Ireland. The anticyclone was of medium intensity—the highest pressure just exceeding 30·4 inches near the centre on Sunday morning (30·41 inches at Leith). Towards the close of the week, the area of highest pressure was found off the West of Ireland. It is interesting to observe that a shallow area of low pressure lay over the North of Spain, the South and West of France, and the Bay of Biscay during the whole week. This "thunderstorm depression" produced thunderstorms almost daily in the districts named—a heavy fall of rain (·64 inch) accompanying a storm in Jersey early on Friday morning. At this time the electrical disturbances reached as far north as Prawle Point, in Devonshire. In Dublin, the wind was nearly always E., or N.E., or N.; the sky was densely clouded in the mornings, while the afternoons often proved sunny. Temperature was low, but uniform. The mean height of the barometer was 30·291 inches, pressure ranging only from 30·370 inches at 9 a.m. of Sunday (wind, N.N.E.) to 30·203 inches at 9 p.m. of Saturday (wind, N.N.W.). The corrected mean temperature was 56·8°. The mean dry bulb temperature at 9 a.m. and 9 p.m. was 57·5°. The screened thermometers rose to 65·7° on Saturday and fell to 47·9° on Friday. There was no rainfall until the early morning of Sunday, July 31st, when ·010 inch fell in a shower. The prevailing wind was northeasterly.

Sunday, the 31st, was rather squally and cloudy, but otherwise very fine, although slight showers fell in the early morning.

The rainfall in Dublin during the seven months ending July 31st has amounted to 13·722 inches on 109 days compared with 10·935 inches on 92 days during the same period in 1891, 15·587 inches on 118 days in 1890, 13·146 inches on 112 days in 1889, 15·994 inches on 109 days in 1888, 7·935 inches on 80 days in 1887, and a 25 years' average of 14·733 inches on 112·6 days.

At Knockdolian, Greystones, Co. Wicklow, the rainfall in July was 2·925 inches on only 10 days, compared with 1·325 inches on 18 days in 1891, and 1·489 inches, distributed over 18 days, in 1890. Of this quantity ·580 inch fell on the 9th, ·730 inch on the 12th, and 1·150 inches on the 15th. The total fall since January 1 has been 16·708 inches on 90 days.

PERISCOPE.

ADMINISTRATION OF CHLOROFORM.

Dr. B. W. Richardson (*Asclepiad*, 34, Vol. IX.) points out "the risk of prolonging the administration of chloroform, after the dangers of the first degree are over, so as to lead to storage of chloroform in the tissues, with after-reabsorption of it into the blood from the various organs in which it is retained."

OATMEAL PYROSIS.

Dr. B. W. Richardson (*Asclepiad*, 34, Vol. IX.), after describing a case of pyrosis arising from the use of oatmeal, and some experiments made with oatmeal and barley-water, writes:—"I am led to think there is no more frequent cause of pyrosis than oatmeal or a similar fermentative food."

LEPROSY AND FISH.

In a recent issue of the *N. Y. Medical Record* appears a letter on this subject from Dr. Crane, lately Government Physician in Hawaii, which seems to show that Dr. Hutchinson's theory of the connection between leprosy and a fish diet is not supported by Hawaiian experience. He says:—"From time immemorial, the staple food of the native Hawaiians had been fish, and principally raw fish. Until about 1860 there is no history nor tradition of the existence of leprosy among them. At about this date it appeared, and at the time of its appearance white people had been among them for forty years, and their food and methods of living had changed greatly. Canned foods, fresh meat, and vegetables had been so widely introduced, that the use of fish, and especially raw fish, had been enormously decreased, and could not be considered as a prominent feature of their diet. At the present day, while consuming no remarkable amount of sea food, one Kanaka out of every thirty is a leper. All fish, no leprosy; little fish, much leprosy. This has been the history in Hawaii."

ALCOHOLISM.

Thomas S. Latimer, M.D., briefly records (*Medical News*, Philadelphia, 2nd July, 1892) the clinical history and treatment of two thousand and twelve cases of alcoholism, of which eighty-seven were cases of *mania-a-potu*, treated consecutively in the Baltimore City Jail. There were only two deaths—one died before being seen by the doctor, the other rushed from his cell in an upper story and threw himself over the railing on to the stone floor beneath. Many of the cases took morphin, cocaïn, or chloral in addition to alcohol. In no case was alcoholic drink given during treatment. The period of confinement averaged thirty days, which evidently was not sufficient to break the drink-habit, as most of the cases returned soon after their discharge. Dr. Latimer comes to the following conclusions:—"1. That the clinical phenomena attending excesses in the use of alcohol are the direct result of over-stimulation, and are not due to the abrupt withdrawal of the stimulus. 2. That though ability to swallow and retain stimulants is frequently wanting, the desire for them almost uniformly persists. 3. That alcohol in any form or quantity is unnecessary in the treatment of such cases, and is usually hurtful. 4. That the absolute and immediate withdrawal of alcohol is of the first importance in the treatment of all of the symptoms due to its excessive use, even in cases characterised by great feebleness and inability to partake of food. 5. That forced feeding is rarely necessary, and is of doubtful utility in most cases. 6. That for the protection of the patient no kind of bonds is called for, and, when necessary, for the protection of others, or for the contents of the room, they injuriously affect the mental state of the patient."

LO SPERIMENTALE.

THE concluding fasciculi of *Original Memoirs* for 1891, the 45th year of this Florentine periodical's existence, contain seven papers; the first two on artificially produced acetonuria and glycosuria. The third is a note on the effects of extirpation of the cœliac plexus in dogs. Dr. Addi's experiments confirm Lustig's conclusions. To summarise his results he found that the extirpation produced no appreciable effect upon the digestive processes; that transient glycosuria appeared after the operation; that acetone was always present in the urine, followed after a few days by a trace of albumen; that the animals lost weight rapidly, in spite of abnormal appetite and abundant food; that after a time they began to recover weight; that the mutilàtion was not in any instance fatal. In another paper Drs. Martinotto and Tedeschi report their researches upon the effects of inoculating carbuncle into the nervous centres of a great variety of animals. The results of their investigations do not seem to justify the waste of life and the suffering involved in the experiments.

THE TERCENTENARY OF THE UNIVERSITY OF DUBLIN.

THE *Medical Magazine* (Vol. I., No. 2, August, 1892) writes as follows:—"Those who had the pleasure of attending the great tercentenary celebration at Dublin are unanimous in their praise of the excellence of the arrangements made for their reception, and in their admiration for the magnificent display afforded by the various processions and ceremonies. It does not often happen that an extensive series of entertainments such as those provided recently in the Irish capital can pass off without a hitch of any kind, and it speaks well for the able secretaries (Dr. Cunningham and Dr. Bernard) and all those who took an active part in the arrangements, that every part of the celebration was completely successful. But over and above the business of the ceremonies, the visitors, one and all, speak highly of the spirit and enthusiasm which seemed to animate the public and the students. The overpowering attractions of an exciting General Election of necessity kept many away from the more peaceable assemblage in Dublin, and the pre-occupation of the daily and weekly press, in task of recording the results of contested elections, prevented this memorable gathering from receiving the notice that it deserved. The representatives of the medical profession who were honoured on this occasion were especially pleased with their reception, and the cordial hospitality for which Dublin is justly renowned."

HER MAJESTY'S BRITISH MEDICAL SERVICE.

THE following is the official list of the successful candidates for commissions in the Medical Staff of her Majesty's Army, at the examination held in London in August, 1892. The list has been furnished to us by the Director-General of the Army Medical Department:—Order of merit—1. Pollock, C. E., 2,815; 2. Mangan, F. M., 2,470; 3. Rivers, J. H., 2,470; 4. Taylor, W. J., 2,450; 5. Longhurst, B. W., 2,385; 6. Farmer, J. H., 2,365; 7. Buswell, F. R., 2,310; 8. Berryman, H. A., 2,295; 9. Symons, F. A., 2,285; 10. Samman, C. J., 2,235.

BRITISH MEDICAL SERVICE.

THE subjoined is the official list of surgeons on probation of the medical staff of the British Army who were successful at both the London and Netley examinations. The prizes are awarded for marks gained in the special subjects taught at the Army Medical School. The final positions of these gentlemen are determined by the marks gained in London added to those gained at Netley, and the combined numbers are accordingly shown in the list which follows:—July 29th, 1892—1. [a]Hinge, H. A., 5,660; 2. [b]M'Naught, J. G., 5,646; 3. Bray, H. A., 5,641; 4. M'Dermott, T., 5,515; 5. Slayter, E. W., 5,341; 6. Thurston, H. S., 5,191; 7. More, L. P., 5,042; 8. Hodgens, C. O'C., 4,944; 9. Tyrrell, A. F., 4,889; 10. Ryall, W. P., 4,851; 11. Jones, T. P., 4,843; 12. Walker, G. S., 4,833; 13. Smyth, W. J., 4,820; 14. Erskine, W. D., 4,807; 15. Thompson, A. G., 4796; 16. Chambers, A. J., 4,793; 17. Moore, G. A., 4,682; 18. Lewis, R. C., 4,638; 19. Austin, R. F. E., 4,612; 20. O'Reilly, W. H., 4,552; 21. Marder, N., 4,493; 22. Condon, E. H., 4,476; 23. Mansfield, G. S., 4,433; 24. Faichnie, F., 4,399; 25. Read, H. W. K., 4,397.

[a] Gained the Montefiore Second Prize. [b] Gained the Herbert Prize of £20.

THE DUBLIN JOURNAL
OF
MEDICAL SCIENCE.

CONTENTS.

THIRD SERIES, No. CCL.—OCTOBER 1, 1892.

PART I.—ORIGINAL COMMUNICATIONS.

PAGE

ART. XI.—The Victorian Era, the Age of Sanitation. By SIR CHARLES A. CAMERON, ex-President, Diplomate (*Honoris Causâ*) in Public Health, and Professor of Chemistry and Hygiene, R.C.S.I.; President of the British Institute of Public Health; Examiner in Sanitary Science, Royal University; Member of Army Sanitary Committee; D.P.H. (Camb.); Fellow of the College of State Medicine; Medical Officer of Health for Dublin, &c., &c.; President of the Congress of the Sanitary Institute, - - - - - - - 289

ART. XII.—The Light Reflex on the Retinal Vessels. By J B. STORY, M.B., F.R.C.S.I.; Surgeon to St. Mark's Ophthalmic Hospital, - 313

ART. XIII.—On a "Pythogenic" Form of Glossitis. By W. LANGFORD SYMES, L.R.C.P., &c., Kiltegan, - - - - - 319

ART. XIV.—Human and Fowl Tuberculosis. By ALFRED R. PARSONS, M.B. Univ. Dubl.; Assistant Physician to Sir P. Dun's Hospital - 324

PART II.—REVIEWS AND BIBLIOGRAPHICAL NOTICES.

1. The Structure and Functions of the Brain and Spinal Cord, being the Fullerian Lectures for 1891. By VICTOR HORSLEY, B.S., F.R.C.S., F.R.S., - - - - - - - - 332

2. On Common Neuroses, or the Neurotic Element in Disease and its Rational Treatment. Three Lectures delivered before the Harveian Society of London, November–December, 1891. By JAMES FREDERIC GOODHART, M.D., - - - - - - 336

PAGE
3. Modern Materia Medica for Pharmacists, Medical Men, and Students. By H. HELBING, F.C.S., - - - - - - - 338
4. Saunders' Question-Compends. No. 22. Essentials of Physics. Arranged in the form of Questions and Answers. Prepared especially for Students of Medicine. By FRED. J. BROCKWAY, M.D.; Assistant Demonstrator of Anatomy at the College of Physicians and Surgeons, New York, - - - - - - - 339
5. Year-Book of the Scientific and Learned Societies of Great Britain and Ireland, comprising Lists of the Papers read during 1891 before Societies engaged in Fourteen Departments of Research, with the Names of their Authors. Compiled from official sources, - - 340
6. On the Medical and Surgical Uses of Electricity. By GEORGE M. BEARD, A.M., M.D.; and A. D. ROCKWELL, A.M., M.D., formerly Professor of Electro-Therapeutics in the New York Post Graduate Medical School and Hospital; Fellow of the New York Academy of Medicine; Member of the New York Neurological Society; formerly Electro-Therapeutist to the Woman's Hospital of the State of New York, &c., - - - - - - - 340
7. Influenza: its Pathology, Symptoms, Complications, and Sequels; its Origin and Mode of Spreading; and its Diagnosis, Prognosis, and Treatment. By JULIUS ALTHAUS, M.D., M.R.C.P. Lond.; Senior Physician to the Hospital for Epilepsy and Paralysis, Regent's Park, - - - - - - - - 341
8. The Drainage of Habitable Dwellings. By W. LEE BEARDMORE, 344
9. The Maritime Provinces of Canada. A Handbook of General Information. Published under the authority of the Canadian Government, - - - - - - - - 344
10. Transactions of the Medical and Chirurgical Faculty of the State of Maryland. Ninety-third Annual Session, held at Baltimore, Maryland, - - - - - - - - 345
Dr. Coltman on "The Chinese," - - - - - - 346

PART III.—MEDICAL MISCELLANY.

ROYAL ACADEMY OF MEDICINE IN IRELAND:—

SECTION OF PATHOLOGY.

Chronic Tubercular Spinal Meningitis. By DR. H. T. BEWLEY, - 347
Horny Epithelial Tumour. By MR. ARTHUR BENSON, - - 348
Artificial Dental Caries. By DR. A. W. W. BAKER, - - 348
Perforating Ulcer of Stomach. By DR. JOSEPH REDMOND, - 348
Pedunculated Sarcoma of Cerebellum. By DR. M'WEENEY, - 349
Ovarian Cyst. By MR. GRAVES, - - - - - 350
Dry Gangrene of Finger in a Patient aged Fifteen; Lacerated Wound of Heart - - - - - - 350

PAGE

SANITARY AND METEOROLOGICAL NOTES. Compiled by J. W. MOORE, B.A., M.D., Univ. Dubl.; F.R.C.P.I.; F.R. Met. Soc.; Diplomate in State Medicine and ex-Sch. of Trin. Coll. Dubl.:—

Vital Statistics for Four Weeks ending Saturday, August 13, 1892, 351
Vital Statistics for Four Weeks ending Saturday, September 10, 1892 - - - - - - - - - 356
Meteorology—Abstract of Observations made at Dublin for Month of August, 1892, - - - - - - 361

PERISCOPE: —

Diffusion of Virus of Rabies, - - - - - - 331
"The Corpuscle," - - - - - - - - 331
Tracheotomy in Florence, - - - - - - - 346
Compressed Medicines, - - - - - - - 346
Archives Cliniques de Bordeaux, - - - - - - 350
Population of New York, - - - - - - - 365
Thyroid Extract after Thyroidectomy, - - - - - 366
Typhus in New York, - - - - - - - 366
The Meeting of the British Medical Association at Nottingham - 367

NEW PREPARATIONS AND SCIENTIFIC INVENTIONS:—

Tabloids of "Bland's Pills," of Ergotin, of Resorcin, and of Ichthyol 367
Valdepeñas - - - - - - - - 368

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OCTOBER 1, 1892.

PART I.

ORIGINAL COMMUNICATIONS.

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ART. XI.—*The Victorian Era, the Age of Sanitation.*[a] By SIR CHARLES A. CAMERON, Ex-President, Diplomate (*Honoris Causâ*) in Public Health, and Professor of Chemistry and Hygiene, R.C.S.I.; President of the British Institute of Public Health; Examiner in Sanitary Science, Royal University; Member of Army Sanitary Committee; D.P.H. Camb.; Fellow of the College of State Medicine; Medical Officer of Health for Dublin, &c., &c.; President of the Congress of the Sanitary Institute.

MY first duty, as President of this Congress, is to tender on behalf of the Sanitary Institute most cordial and hearty thanks to the Mayor, Municipality, and people of this ancient town for the kind reception they have accorded to their visitors. This town has no reason to dread the scrutiny to which it will be subjected by the swarm of hygienic critics attracted by this Congress, for it would be indeed a happy day for these countries if all their towns were as healthy as Portsmouth, which in this respect is only exceeded amongst the great towns by three—namely, Norwich, Derby, and Brighton. In the period 1881–90 the average death-rate in the 28 largest towns of England was 23; in Manchester it was 29·6; in Portsmouth it was 19·6; in Brighton 19·0; in Derby 19·3; in Norwich 19·1. These are the death-rates, corrected by age and sex distribution and by the results of the census of 1891.

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[a] An Inaugural Address delivered at the Sanitary Congress, Portsmouth, 12th September, 1892.

My next duty is to express my thanks to the Council of the Sanitary Institute for the honour which they have done me in selecting me to preside at this important Congress, in which are assembled so many of the most distinguished sanitarians of these countries, and to whom I am sure my arguments will seem trite and my facts threadbare. I believe that I am the first Irishman who has been invited to preside at any of the great annual gatherings held under the auspices of the Sanitary Institute. Perhaps I may be permitted to accept the fact as a compliment paid, not so much to so humble an individual as myself, but rather to the country from which I come, and which, indeed, has of late years no reason to complain of being unnoticed by the people on this side of the channel.

The reigns of many of the sovereigns of these countries have been rendered famous by successful wars, by great acquisition or loss of territory, by religious and political revolutions, by the works of intellectual giants, such as Shakspeare, Bacon, and Newton. The prosperous and prolonged reign of our beloved Queen has been as pregnant of great events as that of any of her royal predecessors, but the happiest and most characteristic feature of her glorious reign of five and fifty years is the remarkable improvement which, during that period, has taken place in the health and comfort of her people. The Victorian era is the age of sanitary and social reforms—of diminished sickness, of increased longevity. Never has the British people been so free, so happy, so rich, so powerful, so educated, so moral, so philanthropic, so healthy, as during the Victorian era.

From the earliest ages, since the people of these islands emerged from barbarism, some attention was given to the subject of public health, and a few enactments, more or less relating to the health of the people, may be found on the Parliamentary Statute Books and amongst the edicts of the sovereigns previous to the nineteenth century. Their provisions were, however, rarely enforced, and if all the Sanitary Acts passed before Her Majesty's reign were collected, they would form a volume of no great size. Let us see what the Victorian age of sanitary legislation and literature has produced.

The first important official report in reference to the health of the people was issued in 1842, under the title of "Report of the Sanitary Condition of the Labouring Population of Great Britain;" it was soon followed by legislative action. A Factory Act was passed in 1844, and this was the first of the many general statutes more or less relating to the public health enacted during Her Majesty's reign. In 1845 a Nuisances Removal Act was passed, and in 1848 the well-known Nuisances Removal and Diseases Prevention Act was put on the Statute Book. In 1866 a useful "Sanitary Act" came into operation, and was followed by a Public Health Act in 1872. The Common Lodging Houses Act of 1851 was the first that dealt specifically with the dwellings of the poorer classes of the community. These six Acts of Parliament have all been amended and extended—some of them a great many times—and they and the amending Acts constitute perhaps the most comprehensive code of sanitary laws ever enacted in either ancient or modern times. In addition to these Sanitary Acts, other important ones have been passed in relation to burial grounds, mines, town parks and open spaces, the adulteration of food and drugs, the diseases of animals used as food, the sale of milk, margarine, and poisons, the pollution of water, trade nuisances, the construction and management of bakehouses, the storage of explosives and petroleum. Numerous private Acts of Parliament, obtained by local authorities, are either altogether sanitary or contain clauses relating to sanitation.

Numerous as are the volumes of sanitary laws, they are exceeded by those containing the evidence in relation to sanitary matters given before Parliamentary committees, royal commissions, and "departmental" committees, together with the reports thereon. These "blue books" constitute an immense library, in which voluminous details are given in relation to the dwellings, occupations, food, water supplies, diseases and medical relief of man; and to hygiene and municipal administration of towns. The blue books issued from the Medical Department of the Local Government Board and the Army and Navy Medical Departments are numerous and valuable.

A third department of sanitary literature consists of the annual and special Reports of the medical officers of health, which may be numbered by thousands. They are the annals of sanitary progress. Until very recently they dealt only with the health of towns; but in the future we may expect valuable Reports on purely rural districts from the county medical officers of health. Until now nothing worth boasting of has been done to improve the status of health in the open country; but the last Local Government Act has created for the rural districts sanitary organisations similar to those which have long existed in towns. We might venture to hope that under the new *regime* of county councils, the well-known rural death-rate of 17 per 1,000 may be reduced to 16 or less.

Not so numerous as the Reports of the medical officers of health, but not less interesting, are the Transactions and Journals of the Sanitary Institute and similar organisations. The Journal of the Statistical Society is rich in sanitary literature. The transactions and journals of medical sanitary societies and of the public health sections of medical associations contain numerous contributions to hygienic literature.

Public Health has its representatives amongst the periodicals of the day—for example, the *Sanitary Record, Hygiene,* the *Health Record,* &c. It has also special departments assigned to it in most of the purely medical journals. In May of the present year a welcome addition to our periodical literature appeared in the shape of the *Journal of Pathology and Bacteriology,* in which, judging by the names of intending contributors on its title-page, we may expect some brilliant writing on the causation and prophylaxis of microbial diseases.

Prior to the Victorian age there was only one really comprehensive and philosophical book on hygiene published in Great Britain; this was the "Philosophy of Health," by Dr. Southwood Smith, which appeared in 1838, and which still may be read with advantage. For some years past dozens of books, more or less relating to public or private hygiene, issue annually from the press; many of them of large size—as, for example, the ponderous book by Stevenson and Murphy, issued in the present year, and which, though only the first volume of a treatise, numbers 1018 large pages.

There is no more convincing evidence that this is the age of sanitation than the fact that the books on the subject published within the Victorian era would furnish a large library, whilst those of an older date would hardly garnish a single bookshelf.

The higher estimation of Preventive Medicine, which lately prevails amongst the professors of the healing art, is shown by the recent institution of degrees, diplomas, and certificates in public health, state medicine, and sanitary science, by the universities and medical and surgical corporations. I am proud, as a citizen of Dublin, to be able to state that the University of that city was the first to create a Diploma in State Medicine. This was in the year 1865. Its example has been followed by all the other medical licensing bodies, and there are now some hundreds of holders of sanitary qualifications. I may also be permitted to say in this connection that the Professorship of Hygiene, which I hold in the Royal College of Surgeons, Ireland, was the first instituted in Europe, with, I believe, one exception—namely, that in the Medical School of Montpellier. The Chair of "Hygiene or Political Medicine" of the Irish College of Surgeons was established in 1844.

Quite recently some of the medical licensing bodies have decided to require of candidates for their ordinary diplomas evidence of study in sanitary science; and for the public health diplomas it must be shown that the candidates have worked in a chemical sanitary laboratory, and have studied the duties of a health officer under a medical officer of health. It is a good sign of the times to find that the Medical Act of 1887 made public health diplomas registrable qualifications.

In the future no one will be eligible to act as medical officer of health for a town of 50,000 inhabitants and upwards unless he holds a registrable qualification in public health.

Before the Victorian era there were few sanitary laws worth administering. and consequently no *raison d'être* for local boards or officers of health. Some drainage works were carried out by the town and country authorities, and a few attempts were made to improve the water supplies of urban districts. The filth produced in towns had to be got rid of in some way; on the other hand, people were taught to be too economical in the combustion of fuel by the imposition of a rate on hearths, and they were encouraged to exclude daylight by having to pay a window tax.

The insanitary state of British towns was made painfully evident by the invasion of cholera in 1831. According to official statistics there died from cholera in 1831–2, 31,376 persons in England and Wales, and 21,171 in Ireland. In 1848 cholera re-appeared in England and Wales, and destroyed 53,273 lives. In 1853, 20,097 deaths were ascribed to cholera, of which about one-half occurred in London. In 1866 it re-appeared, but with less fatal results. The deaths in England attributed to it were 14,378, in Ireland 2,501, and in Scotland 1,470; total, 18,149. This lessened mortality was not due to the milder character of the disease, but rather to the towns being less filthy than they were during previous visitations. On the Continent so virulent and widespread was cholera at this time that it is computed it caused more than one million of deaths. In Italy alone it carried off 120,000 victims; and in the small countries of Holland and Belgium it caused 50,000 deaths.

When cholera first appeared in Dublin in 1831 the sanitary state of the city was deplorable, and consequently 5,632 out of a population of a quarter of a million perished. When it came again to Dublin in 1849, the condition of the city was not so bad, and the victims to cholera were only 1,664. In 1866 Dublin was for the third time visited by cholera, and on this occasion 923 deaths were caused by it. Sanitary matters were in 1866 better than in 1849: and were the disease again to invade Dublin, I venture to hope that it would be much less fatal than in 1866. I think that in British towns generally Asiatic cholera will not again cause such ravages as it did in 1831, 1848, 1854, and 1866. I am not very apprehensive that the epidemic which now rages on the Continent of Europe—in which it has appeared seventeen times since 1829—will extend to our islands.

It was probably the ravages caused by cholera in 1831–2, and more especially in 1849, that first awakened the public to the necessity of improving the hygienic conditions of towns. A committee appointed to inquire into the sanitary condition of the metropolis reported in 1848 that no substantial improvement had taken place in the state of the back streets, lanes, alleys, and courts since the cholera epidemic of 1831–2. The committee expressed an opinion that if the disease were again to visit London, it would spread as extensively and prove as fatal as it did in the former visitation. This prediction was unfortunately but too soon verified; but in the meantime the era of sanitary activity was initiated by the passing of the Public Health Act of 1848. This Act, though it permitted and did not compel sanitary reforms, was a useful one, and was availed of to some extent, as was also the case with the Local Government Act of 1858.

An important agency in promoting sanitary legislation were the valuable Reports—issued in 1842 and 1845—of the Commission on the Health of Towns.

The powers conferred upon health authorities, at first almost invariably permissive, gradually became more of a mandatory character. What a difference, is there not, in the significance of these two words "shall" or "may" in a sanitary statute? The exercise of the powers vested in local authorities has resulted in the expenditure of an enormous sum of money. It has mainly been employed to secure pure water supplies, to construct drains, to pave streets, to thin out densely-inhabited places, to clear unhealthy areas, to erect dwellings of a healthful kind for the working classes, to provide public abattoirs, baths and wash houses, town-parks and open spaces, to build and maintain fever hospitals, to adopt improved methods of filth disposal. The maintenance of staffs of sanitary officers has caused a large addition to the taxation of towns. Formerly very few towns were provided with even a single inspector of nuisances. In 1864 Dublin had but one sanitary officer, now it has nearly fifty. It must be admitted that the administration of the sanitary laws involves a substantial outlay of money. It is, however, money well expended, giving a good return in the form of a lessened sickness rate and reduced mortality. It diminishes pauperism, by preserving the health of the working man. The death of the labourer by a preventable disease may have the effect of sending his children into the workhouse. Sanitation has greatly reduced the mortality caused by preventable diseases. We pay enormous sums for an army and navy to preserve us from foreign foes, to protect our liberty, property, and lives. But there are foes our brave sailors and soldiers cannot defend us from—enemies that kill annually far more than ever fell upon the battlefields during our greatest wars. These enemies are the infective diseases, which are not necessarily concomitants of human nature, and the attacks of which may be, and some day shall be, warded off. We require an army of sanitarians to guard us against those deadly foes. They who vanquish them achieve victories far more glorious than ever warrior won. They are triumphs which are not followed by the groans of the wounded, the wail of the widow, or the cry of the orphan. The trophies of the conquest are increased health, life, and wealth to man.

As the soldier to be effective must be skilfully trained to the use of arms, and grounded in the knowledge of tactics and strategy, so should the sanitarian be thoroughly instructed in the principles of hygienic science, and capable of using the necessary instruments of research. It is not long since every medical man was considered perfectly competent to act as an officer of health, but now the model medical officer of health is expected to know more than the ordinary practitioner. He is expected to be familiar with the use of meteorological instruments, to have some knowledge of geology, to understand sufficient engineering as to know how sewers and drains should be constructed, trapped and ventilated. He may be called upon to suggest how the noxious effluvia from certain factories may be rendered innocuous. He is often requested to pronounce as to the fitness or unfitness of the flesh of animals as food for man, and he cannot do that properly if unacquainted with the diseases of those animals. Not unfrequently he acts as an analyst and examines potable water, determines the amount of carbonic acid in the air of places suspected of being unhealthy, and does other sanitary-chemical work. As yet he has not been called upon to do much as a bacteriologist, but in the immediate future the candidate medical officer of health will be expected to have a thorough knowledge of the pathogenic microbes, to be able to determine the number of micro-organisms per cubic centimetre of water, and to be an adept in the "cultivation" of bacteria, bacilli, spirilla, *et hoc genus omne*.

The medical officer of health will be something more than a physician and surgeon—he will, in a sufficient degree, be a bacteriologist, a chemist, a veterinarian, a geologist, an engineer, a statistician, and, so far as the sanitary statutes are concerned, a lawyer. Already several medical officers of health have taken the barrister's degree.

Until quite recently there were no special arrangements made in the medical schools for teaching sanitary science; but this defect is being remedied, especially as regards the sanitary analysis of air and water, and the chemical and microscopical examination of food and drugs. Courses of lectures on Hygiene and State Medicine are also delivered, but at present not in all the medical schools. On the Continent bacteriological laboratories have been established in nearly all the universities and seats of medical education, and in the great Pasteur Institute at Paris the methods of identifying and "cultivating" microbes may be studied. In these countries there is no great institution altogether devoted to researches into the intimate nature of those organisms, invisible to the unassisted eye, apparently almost without structure, yet endowed with a virulent potentiality rivalling that of strychnin or prussic acid. How marvellous—is it not?—that we discover upon the confines of the visible world the causes of some of the most fatal diseases of man and of his subjects in creation!

There are few natural phenomena more wonderful than the enormous dynamic effect produced upon organised matter by these microscopic objects. A few, perhaps even one, of them introduced into the body of the largest animal may quickly raise its temperature and deprave its vital functions, disorganising the whole living mass, which exceeds in dimension its enemy by countless billions. Shakspeare, whose genius was prophetic as well as sublime, anticipated the modern description of infective matter when he spoke of it as that "whose effect holds such an enmity with blood of man that, swift as quicksilver, it courses through the natural gates and alleys of the body, and with a sudden vigour it doth posset and curd, like eager droppings into milk, the thin and wholesome blood."

Some provision for the study and teaching of bacteriology has been made by Cambridge University, the Colleges of Physicians and Surgeons, London and Edinburgh, the College of State Medicine, the Brown Institute, and, but to no great extent, in a few other places. We have no place which can be compared with the Pasteur Institute in Paris; it is the largest and best equipped bacteriological laboratory in the world. The British Institute of Preventive Medicine, established in 1890, proposes to found a bacteriological laboratory and accessories, on a scale equivalent to that of the Pasteur Institute. For this purpose it asks the rich and generous British public to subscribe £100,000. Some handsome donations, including one of £2,000 from Mr. Mond, have resulted from this appeal; and let us hope that British philanthropy, to which we are indebted for many noble gifts to the nation, will endow an institution, the objects of which are eminently for the benefit of man.

Hardly less important than the medical officers of health, and the medical inspectors of the Local Government Board, are the rank and file of our sanitary army—the inspectors, or rather *discoverers*, of nuisances. Formerly anyone was considered competent to do the work of the sanitary inspector, and persons who had been failures in other walks of life were often provided for by appointing them to be nuisance inspectors. This happily is now as a rule an exploded practice. It is realised that the person who has to discover sanitary defects in dwellings, public institutions, factories, schools, and other places, should have some acquaintance with the laws of health. The Sanitary Institute never did a better thing than the institution of their certificates for inspectors of nuisances, and also for local surveyors. Since 1877 no fewer than 1,312 candidates for the sanitary certificate have been examined, of whom 825, or 63 per cent., were successful. During the same period 78 local surveyors received certificates, and 113 were unsuccessful.

During the Victorian age many millions of money have been spent in the execution of sanitary works, and in the maintenance of a legion of sanitary officers. Have the results of this vast expenditure of money and human labour been such as to satisfy us that it has not been a waste of our pecuniary resources and our time? Do they encourage us to further outlay and increased exertions? I think both queries may be answered affirmatively. That money spent to improve the sanitary condition of places has not always been judiciously laid out is quite true, but the same may be said of expenditure for most other public purposes. It must, moreover, be admitted that the provisions of many of the Acts relating to health have not been fully carried out, and that many local sanitary authorities, especially in rural districts, have lamentably failed to perform the duties, whether permissive or mandatory, entrusted to them by Parliament. It would not be difficult to discover places where the sanitary statutes are almost or wholly dead letters. They would indeed be dead letters in more places than they are were it not for the powerful influence exercised upon public opinion and on the conduct of the authorities by such organisations as the Sanitary Institute, and by the pen and voice of earnest sanitarians. There are hundreds of towns and villages in these islands which are still unprovided with proper arrangements for drainage and filth disposal, and which are dependent upon the scanty supplies of water, often of bad or inferior quality. On the whole, however, it must be admitted that the sanitary powers confided to the local authorities have been largely put in force. Let us see what good has resulted therefrom.

I do not propose to institute, except in the briefest manner, comparisons between the England of to-day and the England of a century or two ago. From 1700 to 1750 the death-rate in London was so high that population stagnated. In the former year the inhabitants numbered 665,200, and in the latter year 653,900. During this period the deaths were in the ratio of about 1 per 30 persons living. By 1801, the population had crept up to 777,000, and the deaths had fallen to 1 in 41 persons living.

This great improvement in the state of public health in London was not, except to a trifling extent, the result of sanitary legislation. People were becoming more enlightened on many matters affecting their health, partly owing to a more general knowledge of chemistry, physiology, and other sciences relating to man and his surroundings. When those entrusted with the conduct of public affairs became aware how much the health of people was affected by bad water, by foul emanations from cesspools, and by too great a density of population, they began to secure supplies of pure water, to construct proper house drains and street sewers, to remove systematically filth from houses, and to widen streets. The promulgation of the natural laws of health preceded the enactment of laws of health by the State. Jenner's discovery of prophylaxis in smallpox had for its corollary the vaccination laws. The chemical analysis of water was the basis of Acts of Parliament relating to water and rivers.

Until about 40 years ago common-sense was the only motive power which impelled sanitary reforms in London and elsewhere. It was not inoperative, for early in this century the grosser defects in public and private hygiene had been recognised, and, to a great extent, remedied.

In Rickman's Report to Parliament on the Census of 1811, he gives the following estimates of the death-rates in England:—

In 1780	- -	1 death	per 40	persons living.
„ 1790	- -	1	„ 45	„
„ 1800	- -	1	„ 47	„
„ 1810	- -	1	„ 49 or 50	„

If these estimates are reliable, it would seem that after the great improvement in the public health in the latter part of the eighteenth and early portion of the nineteenth century no sensible change for better or worse took place for about half a century. According to Rickman, the death-rate in 1810 would be about 20 or 21 per 1,000 persons living.

In Dr. Newsholme's excellent work on "Vital Statistics" he gives the death-rate for males in the period 1838-1854 as 23·28 per 1,000 males living, and the rate for females at 21·65. It would therefore appear that the mortality of the population had increased as the century grew older. Probably the earlier statistics, collected before the Act for the registration of births, deaths, and marriages, were not quite accurate; no doubt some deaths escaped record. It would, however, seem that from 1810 to 1854—making some allowance for defective registration—there was no reduction in the death-rate. Even if we take the period 1851–60 we find no improvement: the deaths were in the ratio of 22·25. In 1861–70 the rate was 22·5, or 0·25 more than in the previous decade. It must, however, be borne in mind that from the beginning of the century population was increasing rapidly in the towns—which must always, at their best, be less healthy than the country—whilst in the rural districts population remained stationary or declined. It was therefore something to boast of, that although the towns of England were increasing in population at the rate of from 200,000 to 300,000 annually, the death-rate of the whole country had not sensibly increased.

In 1872 a Public Health Act was passed, which was amended and improved in 1875. This Act has been one of the most valuable ever passed, and to its operation must be reasonably attributed the improvement of the public health during the last two decades.

During the ten years ended in 1850 the mean annual death-rate in the Metropolis was 24·8 per 1,000 persons living; in 1851–60 the rate was 23·4, and in 1861–70 it was 24·1 During these thirty years there was no marked improvement in the sanitary state of London. Now comes the epoch of sanitary activity: in the period of 1871–80 the death-rate fell to 22·5, and in the decade ended in 1890 it further declined to 20·5, or 4·3 below the rate for the period 1841–50. If the death-rate in Greater London was as high during the years 1881–90 as in the period 1841–50, nearly 50,000 more deaths would have taken place.

Early in the century the provincial towns were, with few exceptions, more insanitary than London. In reading the local literature of these places one often comes across descriptions of the abodes of human beings which are almost incredible, and which happily would now apply to very few English towns. In a pamphlet, entitled "Religion and Crime," by Mr. John M. Morgan, and published by Longmans, London, in 1832, a dreadful description of Bristol is given. The author states that 566 families occupied each only *part of a room*, and that 2,224 families lived each in a single apartment. In a Report upon the sanitary state of Nottingham, in 1839, by Mr. Falkiner, it is stated that there were between seven and eight thousand houses in that town placed back to back, without any thorough ventilation, and unprovided with the proper appliances of civilised life. It is not surprising that in Nottingham 99,017 cases of fever occurred in the years 1835–37; but it is surprising to find that notwithstanding the acknowledged unhealthiness of back-to-back houses, nearly 10,000 of them still exist in Manchester. Need we then wonder that the mortality of the inhabitants of that great city exceeds that of every other of the great towns of England.

Mean annual death-rate in England and Wales:—

Period		Males	Females	Total
1841–70	-	23·3	21·5	22·4
1871–75	-	23·3	20·7	22·0
1876–80	-	22·1	19·5	20·8
1881–85	-	20·5	18·3	19·4
1886–90	-	20·0	17·8	18·9
1891	-	21·5	19·0	20·2

In 1851–60 the death-rate in large towns was 24·7, and in the country 19·9. In 1882–91 the rate in towns was 20·4, and in the country 17·5.

The year 1891 was an unhealthy year, as will now and then be the case; but even in that year the mortality was much below that of the period 1841–70. If it were equal to the mean rate for that period there would have been 63,749 more deaths during the year.

The low death-rate in England is all the more remarkable when we consider the very large proportion of the population located in towns. In 1892, 18,931,070 persons lived in towns, and 10,472,276 in the country; total, 29,403,346.

Whilst the death-rate of London has been declining, the population of the great city has been increasing and concentrating. In 1841 the density of its population was moderate—*i.e.*, 25 persons per acre; but in 1891 there were 56·5 persons per acre. Large and dense populations are as a rule more unhealthy than small and widely scattered ones. In London the unfavourable influence of the closer approximation of its inhabitants is much more than compensated for by the great improvements effected in the general hygienic conditions of the city.

In every other large country in the world the rural population greatly exceeds the urban; in England it is the reverse, 19 out of its 29 millions live in the big towns. It is surprising that, under such conditions, the whole population of England have a greater longevity than the French, Germans, Russians, Italians, and Spaniards. It is observed that whilst the mortality of males under 35 years of age and females under 45 years has been largely reduced, the mortality of males over 35 years and of females over 45 years has increased. I can hardly believe that this is due to the elder persons being now more than formerly injuriously affected by insanitary conditions. Much more likely is it the result of the preservation of the lives of delicate or weakly children, who, developing into adults of poor physique and low longevity, lower the average death-rate of the adult classes; for as Dr. Newsholme has truly said, the same causes which have lowered the mortality of children and young people have also improved the average health of those who survive. It is at least certain that the mean expectation of life as it is termed—that is, the probable duration of a life at birth—has been largely increased within the last 25 years. As women and children are most exposed to the bad effects of insanitary dwellings, it seems probable that their improved health is due to improved domestic hygiene. Men are exposed to greater risks of loss of health and life than women or children. Accidental deaths are more frequent with them, and their occupations are often of an unhealthy kind. For one woman in the accident ward of a hospital there are half a score of men.

With respect to Scotland, I gather from the Annual Reports of the Registrar-General of that country, the latest of which refers to 1889, the following facts:—

The mean death-rate in Scotland during the period 1855-64 was 21·3 per 1,000. The rate remained much the same until the period 1880-89, when it fell to 19·3. In 1855–64 the rate in the large towns was 27·76; in the ten years ended 1889 the rate was only 22·78.

With respect to Ireland, the great Public Health Act, under which the sanitary authorities now work, came into force in 1878. In the years 1871–80, the average annual death-rate per 1,000 of mean population was 18·3, and in the ten years ended in 1890, 17·9. During these periods the rates in the Poor Law Unions, or Superintendent Registrars' Districts, containing towns which had in 1871 or 1881 a population of 10,000 or upwards, were 22·5 and 22·6 respectively. These figures would seem to indicate some progress in the rural districts, and a slight retrogression in the urban districts. There is, however, strong reasons to believe that until 1879 registration of deaths was very defective in Ireland. The 191st section of the Public Health (Ireland) Act, 1878, "provided that the clerk, or secretary or registrar of every burial board and cemetery company or authority, having charge of any burial ground, shall make, or cause to be made, at such times and in such manner as the Local Government Board may direct, a return of the names, addresses, dates of death, and causes of death, so far as ascertained by him, of the persons whose bodies have been interred in such burial ground, to the registrar of the district in which such persons resided at the dates of their deaths respectively." As the clerks to the burial boards are paid for these reports, it is highly probable that they never fail to make them. It was found in Dublin that the returns of burials exceeded by 10 per cent. the registered deaths, from which it follows that previous to 1879 a large number of deaths was not registered, and the published death-rate was 10 per cent. or so below the true rate. It is probable that in many foreign and British Colonial cities the published death-rates are not the true rates—some of them are suspiciously low.

In the case of the Irish urban districts it is highly probable that the registration of deaths was much more accurate in 1881–90 than previously; hence it follows from the figures which I have given that the true death-rate was less in 1881–90 than in 1871–80.

The general death-rate in Dublin declined in the period 1881–90, 15·59 per cent. as compared with the previous ten years, and the decline in the zymotic death-rate was 44·05 per cent.

There is no department of State Medicine of greater utility than vital and mortal statistics. But for their use public attention could not be directed to abnormal mortalities, with the view of reducing them to reasonable proportions. What an important lesson—is it not?—to us to know that in the country only 17 persons die yearly out of every 1,000 persons living, whilst in towns from 19 to more than 30 perish annually! A knowledge of such facts as these—which we learn from the statistician—has been the principal and most successful argument used in pleading the cause of sanitary reform. We shall not be satisfied, says the sanitary enthusiast, until there shall be a uniform death-rate in town and country. Much has been done in rendering the conditions of town-life more healthy than they were, but vast is the task still to be accomplished. We see that four more persons per 1,000 die in the town than in the country; but the difference between urban and rural mortality is even greater than this. The population of the whole country is distributed into groups according to age.

The death-rate in the different groups is ascertained; in some it is very high, in others very low. For example, from 10 to 15 years the mortality per 1,000 is less than one-half as compared with the ages 25 to 35. In the towns the population have a larger proportion of persons whose expectation of life is longest. Brighton and Plymouth are the only exceptions to this rule. Females live longer than males, therefore a larger preponderance of females in a town than in the country at large lowers the apparent death-rate of the former. The "recorded" or crude death-rate in towns is corrected for what in statistical terminology is termed "age and sex distribution." In 1890 the recorded death-rate of Portsmouth was 19·59, and its corrected death-rate 20·18. In Manchester the crude rate was 30·57, and the corrected one 34·06.

The vital and mortal statistics of towns being the principal means by which their actual and relative sanitary states can be ascertained and compared, it is desirable to collect them accurately. Mortal statistics are useless unless we know the number, ages, and relative proportion of males and females of the population to which they refer. This information is obtained only once in ten years. The increase of population (if any) between the year in which a census had been taken and that which next followed having been ascertained, it is assumed that a similar increase goes on subsequently to the second census. The census of 1891 proved that the estimates of population for the previous ten years were very inaccurate in the case of several towns. For example, the annual increase of population in Belfast was estimated to be 1·3 per cent. per annum, but it proved by the census of 1891 to be 2·5 per cent. On the other hand, Liverpool was found to have had its population in 1891 over-estimated by nearly 100,000. A comparison in 1890 of the death-rates of Belfast and Liverpool would have been unjustly to the disadvantage of the former. In the last Annual Summary of the Registrar-General of England of births and deaths in towns, the usual correction for the death-rates is not given, owing to the numbers of the population according to the census of 1891 not having been revised. I have, using the census returns of 1891, recalculated and corrected for age and sex the death-rate in the English (28) towns for the period 1881–90, and find it to be as follows:—From all causes, 23; from the principal zymotic diseases, 3·1. These rates are higher than the corrected rates published during the decade. I give a table showing the correct death-rates in English and Irish towns for this period, and some previous ones.

	England & Wales	Dublin	Belfast
All ages	1,000·00	1,000·00	1,000·00
Under 5	135·55	108·61	123·05
5 to 20	327·05	289·43	326·03
20 to 40	295·02	345·78	332·28
40 to 60	158·60	183·63	156·43
60 and upwards	73·78	72·55	52·21

Recorded and Corrected Death-rates per 1,000 *in Twenty-eight Great Towns in* 1890.

Towns in the order of their corrected Death-rates	Recorded Death-rate	Corrected Death-rate	Comparative Mortality Figure
England and Wales	19·19	19·19	1000
England and Wales less the twenty-eight Towns	18·19	17·79	927
Twenty-eight Towns	21·35	22·75	1186
Nottingham	16·47	17·46	910
Brighton	17·76	18·29	953
Leicester	17·92	18·77	978
Derby	18·51	19·25	1003
Hull	19·25	19·86	1035
Bristol	19·21	19·88	1036
Norwich	21·06	20·14	1050
Portsmouth	19·59	20·18	1052
Huddersfield	18·98	20·84	1086
Birkenhead	19·69	21·06	1097
London	20·30	21·55	1123
Birmingham	20·74	22·12	1153
Plymouth	22·42	22·20	1157
Wolverhampton	21·82	22·50	1172
Bradford	20·39	22·52	1174
Cardiff	20·76	22·53	1174
Oldham	21·23	23·56	1228
Sunderland	22·72	23·66	1233
Leeds	22·63	24·19	1261
Salford	22·36	24·34	1268
Halifax	22·46	24·40	1271
Blackburn	23·47	25·58	1333
Liverpool	23·55	25·84	1347
Sheffield	24·93	26·81	1397
Newcastle-upon-Tyne	25·87	27·38	1427
Bolton	25·78	28·25	1472
Preston	27·43	29·79	1552
Manchester	30·57	34·06	1775

Twenty-eight Large English Towns, 1881–1890.

TOWNS	Recorded Death-rate	Corrected Death-rate	Zymotic Death rate
28 Towns	21·6	23·0	3·1
London	20·5	21·8	3·0
Brighton	18·5	19·0	2·2
Portsmouth	19·0	19·6	2·7
Norwich	20·0	19·1	2·4
Plymouth	21·4	21·2	2·5
Bristol	19·3	20·0	2·1
Wolverhampton	21·7	22·4	2·6
Birmingham	20·8	22·2	3·0
Leicester	20·6	21·6	3·1
Nottingham	21·5	22·8	3·0
Derby	18·6	19·3	2·1
Birkenhead	19·9	21·3	2·5
Liverpool	26·3	28·9	4·1
Bolton	22·4	24·5	3·4
Manchester	26·6	29·6	3·5
Salford	24·5	26·7	4·3
Oldham	23·9	26·5	2·7
Blackburn	24·8	27·0	3·8
Preston	26·5	28·8	4·9
Huddersfield	20·8	22·8	2·0
Halifax	21·2	23·0	1·6
Bradford	20·4	22·5	2·4
Leeds	22·1	23·6	3·2
Sheffield	22·0	23·7	3·5
Hull	21·0	21·7	3·1
Sunderland	22·7	23·6	3·4
Newcastle-upon-Tyne	22·5	23·8	2·9
Cardiff	20·7	22·5	3·1

Re-calculation of Death-rates in English Towns.

YEARS	LARGE ENGLISH TOWNS		
	Recorded Death-rate	Corrected Death-rate	Zymotic Death-rate
1876–1880	23·3	24·8	3·8
1881–1885	21·9	23·3	3·3
1886–1890	21·2	22·6	2·9
1881–1890	21·6	23·0	3·1
1881	21·8	23·2	3·4
1882	22·4	23·9	3·6
1883	21·9	23·3	2·9
1884	22·1	23·6	3·6
1885	21·1	22·5	2·8
1886	21·6	23·0	3·0
1887	21·6	23·0	3·3
1888	20·1	21·4	2·5
1889	20·3	21·6	2·9
1890	22·6	24·1	2·9

Re-calculation of Death-rates in Dublin, Belfast, and Cork.

Years	Dublin			Belfast			Cork		
	Recorded Death-rate	Corrected Death-rate	Zymotic Death-rate	Recorded Death-rate	Corrected Death-rate	Zymotic Death-rate	Recorded Death-rate	Corrected Death-rate	Zymotic Death-rate
1876–1881 -	29·5	32·6	5·1	26·0	29·8	?	30·8	33·7	?
1881–1885 -	27·4	30·3	3·1	24·7	28·4	3·5	26·0	28·4	2·9
1886–1890 -	26·2	29·0	2·9	24·4	28·0	3·0	24·3	26·6	1·8
1881–1890 -	26·8	29·6	3·0	24·5	28·1	3·2	25·1	27·4	2·4
1891 - -	25·5	28·2	1·7	25·5	29·3	2·6	26·9	29·4	1·4

It would be desirable to have a census taken every five years; but the great expense this would entail is a barrier difficult to get over. The greater number of the social facts collected for census purposes are not of great value as factors for determining sanitary progression or retrogression. It might be sufficient to have a mere count of the people every third year. There would be little clerical labour in connection with such a census, but the information gained would be of great use to the Public Health Authorities. A triennial enumeration of the population of Liverpool and Belfast would have prevented the extremely incorrect estimates made for so many years in reference to the birth and death-rates in those cities.

I have already stated that the results of past sanitary work encourage us to redouble our exertions to reduce the urban death-rate to at least that of the most healthy of our towns. If the 23 per 1,000 rate of the 28 great towns were reduced to 19, it would mean a saving of 380,000 lives in a single decade.

The recent reduction of the death-rate is most marked in the case of the infective diseases. Of these phthisis, or pulmonary consumption, is the most fatal. It kills about 50,000 people every year in England, and in Dublin it produces a death-rate of nearly 4 per 1,000 of the population, or nearly double the mortality caused by what is termed the principal zymotic diseases. Hitherto very little has been done to prevent this disease from being propagated from the infected to the sound. It is, however, a great advance towards the proper prophylaxis of the malady to know that its immediate exciting cause is a micro-organism. We must not be discouraged because of Koch's failure to kill the bacillus of tuberculosis; in time we shall be able to control its ravages, and perhaps to extirpate it altogether.

At the International Hygienic Congress of 1891, Dr. Burdon Sanderson expressed his belief in the identity of bovine with human tuberculosis, and his conviction that it was sometimes transmitted to man by infected flesh and milk. Professor Macfadyen said that the milk of tubercular cows was a vehicle of the disease of no uncommon occurrence, and he mentioned that he found the microbe of tubercle in the muscles of the ox. By guarding against the use of infected meat and milk, by the constant destruction of the sputa of phthisical patients, and by the adoption of other measures preventive and remedial, it is to be hoped that the ravages of the disease may in time be largely decreased.

A valuable and suggestive memorandum as to the prevention of phthisis has recently been issued by the North Western Branch of the Society of Medical Officers of Health; it deserves a wide circulation.

Whilst phthisis shows tendency to decline, typhoid fever holds its own and even increases in many towns, and, indeed, in the rural districts. I have ascertained that in 50 large towns in the United Kingdom typhoid fever caused annually 2·3 deaths per 10,000 persons, during the years 1886-91. In Dublin the rate was 5, in Belfast 5·1, and in St. Helens 5·2; this last was the highest rate.

Whilst typhus fever, once so prevalent, has now almost ceased to exist, it is evident that the hygienic measures which have eliminated it and smallpox from so many towns—notably Dublin—have had little or no effect upon typhoid fever. It attacks rich and poor alike, and prevails equally in town and country. I have made especial study of the disease as it appears in Dublin, and have come to the conclusion that there, and perhaps elsewhere, it is miasmatic, or earth born. In Dublin during the last ten years, one person in every 144 persons living on clay soils has had typhoid fever, whilst one in every 92 persons located on gravels has contracted the disease. The disengagement of the micro-organisms of this disease takes place when the soils become dry, and this occurs more frequently in the case of loose gravels than of stiff, impertransible clays. To soil pollution I attribute the prevalence of typhoid fever in these countries, and as a preventive against the disease, we must keep the underground air from entering our dwellings. We should be as particular with respect to the purity of the soils under and close to our dwellings, as we are with regard to the purity of the air which surrounds us.

When all the organic *débris* produced in towns is quickly removed from them to a safe distance, when the dangerous subterranean atmosphere is prevented from entering our dwellings, or even our streets, when sewage flows steadily day and night through well-constructed main sewers, and when our soils are thoroughly drained, and kept free from filth, then we may expect to see a substantial reduction in the mortality caused by typhoid fever and indeed by other diseases.

The high mortality of the working classes is in no inconsiderable degree due to the insanitary dwellings in which a large proportion of them reside. It is to the improvement of the homes of the artisans and labourers that we must chiefly look for a further reduction in the death-rate of towns. Two classes of houses are occupied by workmen and their families—one built specially for them, the other originally intended each for one family of the upper or middle class, but now converted into tenements, having from two to a dozen families each. The latter class of dwellings are often very old and dilapidated, their woodwork is honeycombed, their floors sunken and patched, their walls damp owing to defective roofs, their staircases creaking and broken, their basement stories—formerly clean and well-kept kitchens—now noisome dark spaces, sometimes shut up to prevent them from becoming the asylums of homeless wanderers.

The houses built for artisans and labourers, by persons who only desire to make a profit out of them, are often very defective in construction and in the essentials of a healthy dwelling; their rents are generally too high for other than well-paid artisans. The benevolence of such men as Lord Iveagh and the late Mr. Peabody has provided dwellings of moderate rent, but unfortunately only a small fraction of the population can benefit by the generosity of these philanthropists. Many thousands of nice buildings for workpeople have been built by companies founded upon semi-philanthropic, semi-economic lines; but they, too, are generally let at rents exceeding 2s. per week. The houses which are the most insanitary, and in which the seeds of the fevers are nursed as in a hot-bed, are those occupied by the poorest classes—hawkers, the inferior kinds of labourers and porters, itinerant musicians, hangers-on about the markets, persons with no fixed occupation, poor widows, mendicants, the people who loaf about the streets (particularly in the neighbourhood of public-houses), the seedy persons "who have seen better days," &c. The rents paid, or promised to be paid, by these decayed or always miserably poor people, are very small; and ordinary landlords could not afford to keep their dwellings in the state of repair, cleanliness and convenience which health requires, and indeed public safety demands. It is from these wretched abodes of the semi-pauper classes that the contagia of the infective diseases sally forth, to deal out disease and death amongst the people whose houses are in a fairly good sanitary state. It is not sufficient, therefore, to have our own houses in good order; we are interested, though of course not to the same extent, in having all the houses in our neighbourhood placed under healthful conditions.

For several years past Parliament has been enacting statute after statute in reference to the improvement of the homes of the working classes; and the local authorities have now very large powers entrusted to them for the purpose of building dwellings for artisans and labourers. With respect to towns it seems to me that more has been done for the artisans than for the labourers. I think we should leave chiefly to the operations of the building societies and to private enterprise the providing of dwellings for artisans, as they are fairly well able to take care of themselves; but if the money of the ratepayers is expended in constructing dwellings for the people who can pay only from 1s. to 2s. per week rent, then I say it is well laid out, because it tends to diminish sickness, death and pauperism. I know there are great difficulties, financial and other, in the way of substituting clean and moderately comfortable dwellings for the filthy dens in which dwell at least five per cent. of the urban populations. It is chiefly in such places that the criminal classes reside, and *they* would rather not be supervised by municipal officers. It is probable that a loss would be sustained by letting fairly comfortable and well-kept tenements at rents of from 1s. to 2s. weekly. Corporations can, however, borrow money at so low a rate of interest from the Government for the erection of labourers' dwellings, that if they adopt good schemes, they might provide very low-rent dwellings without incurring much loss. In 1890 the Corporation of Dublin erected eighty-six dwellings for labourers. They consist of two-storied houses, each containing four tenements. There are nineteen of these let at 2s. per week. Each consists of a living room 12¾ feet by 12 feet; a bedroom, 10½ feet by 7½ feet; and a scullery and other accommodation exclusively belonging to the tenement. The rent derived by the Corporation from these eighty-six dwellings pays the annual instalment of the loan of money by which they were built, the interest on the loan, and a surplus of nearly £100 a year. The Corporation, who have not spent a penny of their own money on these dwellings, will in thirty-eight years become their owners, as the loan by that time will be repaid.

In contrast to the good value which these Corporation tenants receive for the small rent which they pay, I show in the following statement the poor accommodation afforded to room-keepers in tenements let by house-jobbers. In four streets (Church-street, Upper Mercer-street, North Cumberland street, and Jervis-street, Dublin), I ascertained that 1,074 families resided in 174 houses. They occupied 1,482 rooms, less than one and a half rooms per family. The annual rent paid by the tenants was £8,311 13s., though the valuation of the 174 houses for rateable purposes was only £2,677 10s. The average weekly rent per family was 2s. 6⅔d. in Church-street; 2s. 8d. in Mercer-street; 3s. 4¾d. in Cumberland-street, and 3s. 8⅓d. in Jervis-street. These figures show that in Dublin at least the rents of the dwellings of the working classes are far in excess of their real value.

The education of the people in sanitation ought not to be confined to limited sections of society, but should be carried out as one complete and well graduated system for the instruction of the whole Nation. A study of the laws of health should form part of the system of primary education, and would be at least as interesting to the youthful mind as a study of the "three R's." The character and conduct of the man are mainly dependent upon the education and training of the child; so also in the future nation its action and progress will be the product of the education given to the actual nation in its infancy and youth. The sanitary lessons which are now being taught to the British people will bear good fruit in the century which is close at hand—the century, let us hope, of low and uniform death-rates.

We are living in an epoch when man is earnestly striving for a higher and better life—when, perhaps, more than at any previous phase of his history, he subordinates the baser instincts of his nature to its higher and nobler attributes. Yet there are not wanting those who view with indifference or scepticism the efforts which man makes to purify himself, morally and physically. These pessimists, or realists, as they love to call themselves, can see nature only in its darker side. They paint the horrors of the plagues, the carnage of the battle-field, the devastation of the earthquake and volcano, the destructive action of the tempest, the sufferings of the sick and dying, the long hours of toil, the intolerable evils of poverty, the miserable struggle for existence. They parade all the evils which afflict man—they review all his inherent failings, defects and vices. They grimly and passively await the moment when they must shuffle off their mortal coil, and, like their meaner fellows in creation, commingle in an inevitable dissolution.

Fortunately for human progress, these realists exercise but scant influence on the destiny of man. They seem to forget that the days of health outnumber the hours of sickness; that we rejoice infinitely more than we mourn; that love preponderates over hate; that there is more happiness than misery; that even pain has its uses, as a preserver of life, as an incentive to pity.

Better far is it to look upon the bright side of nature and to appreciate the beauties of this glorious world of ours, with its towering mountains, its billowy seas, its magnificent forests, its vast expanses of emerald green, its innumerable forms of animal and vegetable life, its harmony of colours, its vast dome of sky, with glittering stars and golden orbs of light. Surely ours is a world well worth living in—a world of joy and beauty, which well may inspire us to look from nature up to nature's God; a world of which the poet says—

"The poetry of earth is never dead
When all the birds are faint with the hot sun,
And hide in cooling trees—a voice will run
From hedge to hedge about the new-mown mead."

Many of the evils which the pessimists believe to be irremediable are in reality within man's power to lessen or destroy. Not a few of them arise from systematic violations of the laws of life and health. We can hardly be clean in our minds if we are foul in our bodies. We should keep corruption as far from us as possible; let us dwell in the freshness of things, and remember always that filth is synonymous with disease and death. Let us worship at the shrine of that goddess who has given a name to the noblest of the sciences—that which relates to the preservation and improvement of that precious porcelain of man's body. Hygeia is depicted as not only beautiful but vigorous, typical of what the human form ought to be. A great American poet says of her:—

"The leaden footsteps of care
  Leap to the tune of her pace,
Fairest of all that is fair;
  Grace at the heart of all grace!
Sweet'ner of hut and of hall,
  Bringer of life out of naught—
Hygeia, oh, fairest of all
  The daughters of time and thought."

ART. XII.—*The Light Reflex on the Retinal Vessels.*[a] By J. B. STORY, M.B., F.R.C.S.I.; Surgeon to St. Mark's Ophthalmic Hospital.

EVER since the invention of the ophthalmoscope, ophthalmologists have been familiar with the appearance of a light reflex or light streak on the retinal blood-vessels, but they are not, even at the present time, quite in accord as to the precise cause of this phenomenon. The history of the subject is briefly as follows:—

The very earliest observer, E. von Jaeger, attributed the reflex to a reflection from the walls of the vessels, though he subsequently, and I think erroneously, modified his theory by assuming that it came from the convex surface of the blood column, the vascular walls being, in his opinion, too transparent and too much of the same coefficient of refraction as the retinal tissue to produce the reflex. This theory of a reflection from the convex cylindrical surface of the blood, or of the vessel wall has been opposed by Loring[b] in 1871, who holds that the light streak is caused by refraction of light transmitted from the illuminated background through the convex cylinder of the blood column, which in fact acts as a convex lens, and this view has again been advocated by Davis, in the "Archives of Ophthalmology," of which paper an abstract can be seen in the *Ophthalmic Review*, 1891, p. 88.

Loring supported his theory by the following arguments:—

1. The light streak is too broad to be a reflection from the convexity of the vessel or the blood column.
2. The blood column is too transparent and non-reflecting to give so brilliant a streak.
3. If the blood column reflected the streak, the latter would be best marked when the vessels are full; but in venous pulsation it disappears when the vein is most full. (Loring describes

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[a] Read before the Section of Anatomy and Physiology of the Royal Academy of Medicine in Ireland, Friday, March 25, 1892.

[b] Archiv. of Ophthalmology. Vol. II., No. 1, p. 95.

venous pulsation as inducing a temporary stasis, and the crowding of the globules together renders the blood column so opaque that the light does not pass through it to cause the reflex.)

4. The state of the background affects the light streak—*e.g.*, it is absent in detached retina.

He supported his theory by the results of an experiment. A glass tube containing carmine solution placed in the bottom of a small box gives a light reflex when a mirror is placed beneath it, and none when the background is a non-reflecting surface—the illumination in both cases being that of ordinary ophthalmoscopic examination.

Loring's theory has been submitted to an elaborate refutation by Schneller.[a] His view is that the reflex is an image of the ophthalmoscopic light reflected from the convex wall of the blood-vessels.[b] This he establishes by a mathematical analysis of what the size of the reflection should be, the data being given—viz., the size of flame of lamp, the curve of mirror and diameter of blood-vessels, and the various distances.

The facts as observed by him agree with his calculations, as, for instance—

1. The reflex is narrower with short-focus mirrors and in myopic eyes.
2. The reflex moves with the rotation of the mirror.
3. The reflex is almost white—not red, as it should certainly be if Loring's view were correct.
4. The reflex is shortened in longitudinal diameter by backward curves of the vessels.
5. The absence in detachment is merely due to a want of perpendicularity of the vessel to the line of sight.
6. Besides, if Loring were right, the coefficient of refraction of the blood must be very much greater than that of the retina, which we have no reason to believe it to be; and the reflex could not be absent in vessels lying obliquely to the line of sight.

The reflex from the veins differs from that from the arteries because the vascular walls are thinner, the vessel is more elliptical in shape, and lies deeper, and the walls of the veins are rougher and more wrinkled than those of the arteries.

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[a] Von Graefe's Archiv. XVIII., 1, p. 113.

[b] Jaeger's Archiv. No. 1.

Otto Becker[a] treats of the same subject, but comes to no definite conclusion. He states that the vessels of a frog's mesentery have the power, which Loring assumes for the retinal vessels, of refracting transmitted light.

Jaeger[b] defends his own view—

1. The reflex cannot come from a tissue beneath the vessel, for it remains unaltered by the background—*e.g.*, it is the same whether the vessel passes over the lamina cribrosa, the ordinary fundus of a dark or light-haired person, a white exudation, or a dark pigment spot.
2. The vessels cast an intense shadow on the underlying tissues, which can be observed easily under certain conditions.
3. The fact that the light streak is not red is enough to disprove Loring's theory.
4. The convex vascular wall, again, cannot cause the reflex, for it disappears when the vessel is empty, as in embolism.

And if the wall were less transparent than the surrounding tissues it would be visible under normal conditions at the sides of the blood column—

a. If the vessel wall caused the reflex by its coefficient of refraction being different from that of the tissues it would also be visible.

b. And its borders would be marked by dark lines due to total reflection.

c. And they would distort objects beneath.

Now, the light streak can be seen on a vessel right up to the border of the blood column of another vessel crossing above it at right angles. Jaeger allows that a small, colourless, hardly visible line can be seen at the edge of the blood column of the upper vessel, more distinctly when the latter is a vein.

Besides, if the vessel wall refracted the light, the streak could be seen through the wall of the upper vessel when, by movements of the head and mirror, it was invisible on the rest of the lower vessel.

Jaeger illustrates his views by experiments made with carmine solutions in two glass tubes, one crossing over the other at a right angle. When the tubes are immersed in a fluid of the same coefficient of refraction as the glass, the streak of light reflected from the lower tube is visible unaltered through the glass wall of the upper tube, and is only arrested by the column of carmine solution—in fact behaves exactly as Jaeger asserts that the light streak on the retinal vessels does.

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[a] V. Graefe's Archiv. XVIII., 1, 281.

[b] Ergebnisse der Untersuchung mit der Augenpiegel. 1876. P. 51.

Schneller returns to the subject of the light reflex in v. Graefe's "Archiv.," XXVI., p. 71, and upholds his own view against Jaeger's. He asserts that both the arteries and veins of the retina have walls which are visible with the ophthalmoscope at least in the larger vessels. Jaeger himself perceived a white line along the border of the vessels, which he erroneously thought to be a layer of white blood corpuscles. Schneller states that the thickness of the arterial walls compared with the radius of the lumen of the vessel is as 1 is to 3; that of the venous walls is as 1 is to 6 or 8. The inner surface of the vascular walls is smooth, the outer surface of the arterial wall is also smooth, while that of the vein is slightly rougher.

On each side of an artery which crosses over a vein a light yellowish-white line can be perceived of from one-tenth to one-sixth the breadth of the blood column. This cannot be the layer of white blood corpuscles imagined by Jaeger, for the thickness of a white blood corpuscle is too little to be ophthalmoscopically visible, and the white corpuscles do not form a continuous layer along the wall of either veins or arteries. This white line can be nothing else but the optical effect of the wall of the blood-vessel.

The vascular walls, therefore, are not absolutely transparent but translucent, hiding underlying blood vessels like faintly muffed glass. The effect cannot be produced by total reflection, as no dark bordering line is present, such as can be seen in a dislocated lens, &c. The smallness of the vascular wall prevents any prismatic effect, and its translucency prevents it casting a visible shadow on underlying objects.

Schneller rejects Jaeger's argument drawn from the disappearance of the light streak when the vessel is empty, as it may be the absence of the cylindrical convexity of the wall which causes the obliteration of the reflex. Jaeger's second point—that the coefficient of refraction of the vesssel wall is too nearly equal to that of the retinal tissue—has been dealt with above. The effect is caused by slight milkiness of the wall. Jaeger has subsequently advanced the hypothesis that the refractive index of the blood is actually less than that of the retina; but this cannot be the case. The average index of the vitreous is, according to Krause, 1·3485, and that of the retina must be practically the same. Now Thomas Young (it is interesting to find that a German in 1880 has to go back to Thomas Young in 1801 for an authoritative statement on a point of physiology!) determined the index of blood serum to be 1·354—*i.e.*, actually higher than that of vitreous or retina.

Schneller has attempted to estimate the relative luminosity of the light streaks on the veins and arteries, optic disc, &c.

That on the arteries is brighter than that on the veins. On Jaeger's theory the reverse should be the case (by contrast with the colour of the blood the arterial streak should appear less bright than that on the veins), and the thicker arterial wall should make the arterial reflex less clear and sharp than that on the veins. Besides, the venous reflex should not be so irregular as it is, for the surface of the blood column is perfectly smooth.

All these difficulties are removed if we assume that the reflex comes not from the blood column, but from the vessel walls. The smooth arterial wall reflects a sharper image than the more wrinkled venous wall, and as it is also thicker, the reflex is brighter.

There are, then, only three theories suggested to explain the light streak on the retinal vessels. Which of these may be regarded as the correct one? There can be no reasonable doubt as to which is incorrect—viz., Loring's. The arguments by which it is supported are unsound, and the experiments are inconclusive. All that they prove is that a cylindrical column of carmine solution has the power of refracting light—a statement which no one wishes to controvert; and Davis has merely shown that a blood column has the same power, which was observed by Von Becker years ago; all these being observations made in air. As to the breadth of the light streak being too great to be a reflection from the convexity of the vessel, why the breadth of the streak depends entirely on the size of the source of light, which may be as large as the diameter of the pupil, or even larger. I can corroborate Schneller as to its varying directly with the magnitude of the source of light. Then, as to the transparency of the blood column, we all know it is not transparent, but only faintly translucent. Its shadows are visible, not alone objectively but subjectively in the well-known vascular figure of Purkinje.

As to the curious argument drawn from the absence of the light streak in the veins when distended by venous pulsation, I have not been able to observe the phenomenon, though I have carefully looked for it; and, if it were a fact, its explanation would be easier by the assumption of a change in the form of the surface of the vessel, making its surface no longer perpendicular to the line of sight.

The absence of the light streak in detachment of the retina is better explained by the slanting course of the vessels than by the change of background, while it is not improbable that the real agent may be something quite different from either theory, and the streak is not always absent. I have frequently observed it in typical cases of retinal detachment.

Loring's experiment is the most unsatisfactory proof of all. With a mirror placed beneath his glass tube, one sees the tube twice over—viz., the real tube and its image in the mirror. If these two objects are made to coincide the tube seen appears nearly double as bright as it would otherwise appear, but nothing at all resembling the light streak on the retinal vessels can be made out on it which cannot be seen on glass tubes over a dark background. A light streak can be made out easily enough on a glass tube with a less luminous background. In any case Loring's experiment should not be made in air, but in some medium with an index of refraction pretty nearly equal to that of the glass tube and its contained fluid. If this be done (as in the tubes exhibited sunk in glycerine jelly) anyone can convince himself that the only reflex at all resembling that on the retinal vessels is that on the anterior surface of the tube.

Again, Schneller's observation that the light reflex moves with the rotation of the mirror is perfectly correct, and disproves Loring's theory completely, as does also the even more incontrovertible fact that the light streak is not red, but white. The absolutely unchanged character of the reflex, no matter what be the background—white, as in optic disc; black, as over pigment spots; or red, as over subjacent blood vessels—is also in my own experience an easily observed fact, and one vouched for by the acutest of all ophthalmoscopic observers—the late Ed. V. Jaeger, and it is completely destructive to Loring's theory.

When we come to a choice between Jaeger's second theory and his first—which is the one advocated by Schneller—the decision is not quite so easy; but I have myself no hesitation in electing to stand by the latter—viz., that the light streak is a reflex from the wall of the vessel.

Jaeger's experiment with the glass tubes is perfectly correct, so far it goes, but does not disprove the theory that the light streak comes from the vascular wall, if we assume with Schneller that the wall does not differ appreciably in refraction from the retina, but is slightly opaque, and by its slight opacity causes the reflex. Or even if the reflex was caused by the refraction of the wall being high, still Jaeger's experimental argument could not be pertinent unless the whole thickness of the wall exhibited the high refraction. If it were only an extremely thin layer of the wall no visible effect would be produced on the light streak reflected from subjacent vessels.

But I can corroborate Schneller's observation that the walls of the larger retinal vessels are distinctly visible in ophthalmoscopic examination. In fact, since I have looked for them I have never failed to see them, and when in pathological conditions the vascular walls are thickened and opaque (in perivasculitis), the vascular light reflex is quite as marked a phenomenon as it is when the vessel walls are difficult to detect, as in young and healthy eyes.

A very striking and convincing observation can sometimes be made in young eyes which have that so-called shot-silk appearance in their retinæ. The vascular light reflex can, in these eyes be seen as an intensification of the retinal reflex. As the light flashes over the retina it illuminates the arterial wall just in the same way as it does the shot-silk surface. The two reflexes are apparently caused by similar surfaces—that on the arteries being generally on a plane somewhat deeper than that reflected from the internal limiting membrane—if it be the internal limiting membrane which causes the shot-silk appearance.

I may add that in these eyes with that rare affection detachment of the choriodea I have seen the reflex.

ART. XIII.—*On a "Pythogenic" Form of Glossitis.* By W. LANGFORD SYMES, L.R.C.P.I., &c., Kiltegan.

CASES of glossitis are of such unusual occurrence that they may be classed amongst those rare diseases which form, as it were, landmarks in one's experience, and interesting pages in one's note-books. Apart, however, from this rarity, the chief peculiarity of the following examples chiefly lies in their strange mode of origin—one which, if not unknown, has at least passed hitherto unnoticed in most surgical text-books. The notes are briefly as follow:—

CASE I.—B. E., aged fifty, a strong robust labourer of low and plethoric build, was for some days employed at work in old drains and ditches in wet and marshy land, which, saturated with stagnant water, had lain choked for years. A very fœtid smell rose from the work as he went along—so much so that he felt sick frequently. Within a few days he complained of malaise and slight lump in the throat, was seized with rigors, accompanied by dribbling of saliva and pain in swallowing. These symptoms increased until his tongue became acutely swollen and protruded from his mouth. There was very little glandular enlargement under the jaw. He spoke with a peculiar pharyngeal or gurgling voice, and was in imminent dread of suffocation.

When seen his mouth was open and the tongue protruding—it was acutely tender, notched by the teeth, and seemed thicker and harder the further back one examined it, being rather worse on the right side. He swallowed with intense pain and difficulty. Two free longitudinal incisions were made from as far back as possible to its tip, one on each side of the median raphé. From these he bled most profusely, one of which eventually required plugging before it ceased. He was much relieved by this procedure, but it was necessary to repeat the incisions the following day as the tongue quickly swelled again. With gargles of borax and sodii bicarb., fomentations, poultices, and the internal administration of quinine the inflammation gradually subsided, and the tongue regained its function completely.

Case II.—T. D., aged thirty, a perfectly healthy man, was for some weeks in June and July working in old dykes and ditches, which were very foul and offensive, not having been disturbed for a great length of time. He developed malaise, pains in his bones, and headaches, which, with a sensation of lump in the throat, lasted for nearly three weeks. This "lump" increased, the right side of his mouth and face became painful, and his tongue began to swell. Thinking the mischief was due to a carious tooth, he had this extracted without relief. When seen on August 4th his temperature was 99°, pulse 76, skin moist and hot; he could not put out his tongue although he could open his mouth freely. There was no swelling or infiltration under the jaw. His voice was very peculiar, of a gurgling and pharyngeal character, and his breathing was difficult. Swallowing was almost impossible from his dread of the resulting pain, and he had a feeling of choking which alarmed him much. On examining his throat it was curious not to find tonsillitis, as his symptoms very closely resembled it in a severe form. The right side of the tongue was seen to be swollen considerably; it was very tender, particularly far back near the base, and below the line of sight, where in a globular shape it impinged on the tonsil, being here very thick, hard, and tense, while it faded away like a wedge towards the apex. Its appearance was characteristic—covered with a greyish, slimy fur, œdematous, and indented by the teeth, it lay paralysed in the floor of the mouth, its outer edge tilted up, exposing the red and tumefied under surface to a greater extent than the dorsum. The swelling was very abruptly limited to the right side by the septum, which feels under these conditions like a very tightly stretched cord. He had profuse salivation from his inability to swallow, and great pain in the ear. He was ordered warm lotions of biborate of sodium with carbolic acid, an aperient, and a mixture of aconite and tartar emetic. The following morning, being much in the same state, a long and free incision was made into the tongue along the junction of the dorsum and side. The wound freely spouted very offensive blood, but no true pus. After about six ounces had escaped he was much relieved, and protruded it with more ease. That evening, however, the swelling returned, and a second freer and much deeper incision was made through the dorsum, and one of the ranine veins opened underneath. From these incisions, although he bled less freely, he obtained more relief than before. He was now given quinine internally, with dilute nitric acid, and gradually regained his strength and the use of his tongue.

The occurrence of these two cases under precisely similar conditions is interesting, the more so as they may help to expunge from the literature of a very rare disease—or at least lessen in significance—that mischievous word "idiopathic." That causes other than those here described may be at work in many cases of so-called "idiopathic" glossitis is very probable, for all writers speak of instances for which no cause can be assigned. However, from the foregoing examples it is evident that amongst these an important factor in producing the disease is "pythogenesis," or direct poisoning from some product of vegetable decomposition through the medium of the system. In these cases there seems as it were a prolonged period of incubation before the tongue is acutely affected, characterised by malaise, dull headaches, pains in the bones, followed after several days by a feeling of lump in the throat when swallowing, referred to the anterior part of the neck, after which rigors and salivation usher in the acute symptoms. The system is profoundly affected. There is a livid, congested, unhealthy, or poisoned appearance, very offensive breath, with great prostration and weakness. Recovery is very tedious after all acute local symptoms have disappeared, and a distinctly unilateral case may be quite as urgent and protracted as a bilateral one. The amount of lingual tissue engaged bears no proportion to the constitutional disturbance.

In these days of advanced bacteriology, with its chemical pathology, there is a tendency to trace many diseases, even the most obscure nervous affections, to the action on the system of the various parasitic forms of plant life, and numerous varieties of the Schizomycetes are now considered to be distinctly pathogenic, whilst some have been definitely proved to be the essential cause of many of the specific infective diseases. Without, however, attempting to enter the subject to more than a clinical depth, it is interesting to notice that the conditions above cited as causing this form of glossitis are precisely those which have been proved to favour the development of the specific micro-organism of diphtheria,[a] with its tripoisonous products of enzyme, toxalbumose, and organic acid. In many cases of so-called "idiopathic" glossitis where no definite cause could be discovered, one author (Dr. W. Kerr, 1833) believed that there was an idiosyncrasy or peculiar predisposing influence in the system which distinctly favoured its onset and development—a view which is in no way improbable. Once developed its subsequent progress is probably similar to the other forms of the disease from injuries, stings of insects (wasps), mercurial or iodine poisoning, secondary inflammations, or the "glossitis variolosa"[b] of small-pox; one instance only having been seen in typhus by Murchison.

Of the symptoms of glossitis none is more interesting than the pain in the ear, due, no doubt, like that in quinsy, to the tympanic branch of the glosso-pharyngeal nerve, by which latter the posterior third of the tongue is supplied. The voice is peculiar and pharyngeal, being produced more by the bulging of the tongue into the pharynx than inability to articulate, for the tip is free to pronounce words, while the base may touch the posterior wall of the pharynx from the infiltration of its muscular substance. Similarly, swallowing is intensely more painful than talking, showing the greater implication of the base.

Though seemingly an absurdity, it is nevertheless quite possible that a surgeon might examine a patient with glossitis, and that in its most dangerous form, and not detect anything the matter with the tongue. The peculiar voice, inability to swallow, the pain in the ear, and the feeling of "lump in the neck," leading one to pass over glossitis, and, looking beyond the tongue at a slightly reddened throat, conclude that the tonsil was at fault. This liability is rendered more likely by the facts that in severe tonsillitis, in addition to these symptoms, we frequently cannot see the tonsil, while from glossitis being amongst the rarest of diseases, its most serious forms being very far back almost beyond the reach of the finger, or below the line of sight, one is apt to pass over the true seat of the mischief.

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[a] Professor Sims Woodhead. "Address in Bacteriology," Nottingham, 1892. Dr. Thorne Thorne. "Milroy Lectures," 1892. Dr. Sidney Martin. "Goulstonian Lectures," 1892.

[b] Dr. J. W. Moore. "Eruptive and Continued Fevers," 1892.

Most cases of glossitis end favourably, though in different manners. It is a very peculiar inflammation; and in contradistinction to the above form, which is gradual in its onset and protracted in its decline, a case of unusual severity with protrusion and paralysis has been seen by Frank, of Vienna, to come and go completely in three days. The same authority tells us of the formation of a false membrane in the substance of the organ when intensely inflamed, while suppuration has frequently resulted, and even gangrene is described in an extremely debilitated constitution.

Of remedial measures, in addition to leeching, calomel, and antiphlogistics, antiseptic lotions, and, in *miasmatic* or *pythogenic* cases, quinine, the question of treatment will mainly turn on that of incisions. Some authors deem then unnecessary, as never having seen them required, but in severe cases, where the tongue encroaches on, and almost occludes, the pharynx, no other remedy will perhaps so surely relieve the local infiltration and the patient's anxieties. They must be very deep, for the tongue, although it may bleed freely, may quickly swell again as if nothing had been done. In each of the above instances it had to be twice performed.

The general infiltration, tumefaction, and heat of the organ, with its thick coating of fur, so obscures the local pulse of the lingual artery that the precautions so clearly laid down for its avoidance are of questionable value. The relations of parts are much altered by the inflammatory effusion. The mucous sides of the tongue and lingualis muscle, being less resisting than the thickened and coated dorsum, yield to the distension so much that the tongue seems tilted up, exposing a red swelling along by the teeth. Incisions—here healing up too quickly to give much permanent relief to the tension—will be found to be most beneficial very far back through the point of most tumefaction and greatest tenderness, or in the median raphé on the underneath surface.

In the after-treatment of this form of glossitis, *quinine* with the mineral acids will be found most serviceable, while antiseptic lotions are indispensable to the proper cleansing and sanitation of the mouth.

ART. XIV.—*Human and Fowl Tuberculosis.*[a] By ALFRED R. PARSONS, M.B. Univ. Dubl.; Assistant Physician to Sir P. Dun's Hospital.

AN investigation into the causation of any given disease may be undertaken from three different standpoints. The clinical history and bedside phenomena of several similar cases, grouped and compared, may form the basis of a theory as to the probable nature of the affection, or the anatomical lesions and their distribution may present indications of ætiological significance; or, finally, experimental pathology may indisputably point to the infective nature of the process, and thereby render sure the first step towards its complete elucidation. Centuries of clinical observation threw but little light on the causation of tuberculosis. If certain cases appeared inexplicable on any but an infective theory, others presented themselves in which no such assumption seemed admissible. Pathological anatomy, in the hands of Buhl, Ponfick, and Weigert, explained the occurrence of miliary tuberculosis by a systemic infection from an old caseous focus, but could give no information regarding the causation of the latter. Experimental pathology, nearly sixty years ago, first demonstrated successfully the infective nature of the tubercular process when Klincke in 1843 produced extensive disease of the lungs and livers of rabbits by inoculating them with portions of organs containing numerous tubercles. These researches, soon forgotten, were confirmed and extended some twenty years later by Villemin, who produced artificial tuberculosis, and proved experimentally the identity of the human and bovine forms. His results excited considerable attention, and the opponents of the infective theory claimed to produce tubercles by the inoculation of non-tubercular matter. To Cohnheim and Salomonsen is due the credit of demonstrating, by a method beyond suspicion, the infective nature of tuberculosis. In a happy moment they thought of selecting the anterior chamber of the rabbit's eye for their experiments, and proved conclusively that the minute tubercles in the iris, characterised by their late development, further course and caseation, were produced only after the injection of tubercular matter.

So much was known of the causation of tuberculosis when Koch commenced his classical researches. These culminated in a paper read by him on the 24th March, 1882—just ten years ago—before the Physiological Society of Berlin, in which he claimed to have discovered the cause of tuberculosis in the form of a well-defined bacillus. A decade of this critical and sceptical age has since passed away, Koch's claims have been investigated by friends and foes, and to-day every line of that original treatise, save a few statements of comparatively slight importance, remains intact. One of these statements—the error of which Koch himself has recently pointed out—dealt with the relation of avian to mammalian tuberculosis, and as a further series of investigations on this subject have been lately made by two members of the French school, I thought it would not be amiss to lay a summary of the more recent literature of this question before the Academy.

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[a] Read before the Section of Pathology in the Royal Academy of Medicine in Ireland, on Friday, April 1, 1892.

Of the many difficulties against which Koch had to contend in his earlier experiments, none probably exceeded that of obtaining a pure culture of the tubercle bacilli. After many failures he at length succeeded in growing them on blood-serum. In 1885 Nocard pointed out that the addition of small quantities of sugar and peptone to the serum favoured their development, and a little later Nocard and Roux showed that if glycerine be added to other ofthe nutritive media, the tubercle bacilli appeared to grow more easily, to change their pathological properties, and to increase their virulence. Yersin obtained some of these cultures on glycerine-agar, and found that by inoculating them into the veins of a rabbit it was possible to produce a form of tuberculosis characterised by the absence of tubercles. The inference drawn from such observations, and one which gained currency in France, was that by cultivating the tubercle bacilli on glycerine-agar, it was possible so to alter their properties as practically to produce a new variety of that organism. This inference was apparently supported by an observation of Metschnikoff, who pointed out that tubercle bacilli, developed on agar-glycerine, grew luxuriantly at 43·6° C.; whereas Koch had stated that growth ceased if the temperature exceeded 41° C.

To a member of the Italian school belongs the honour of first suggesting what eventually proved to be the correct explanation of these discordant results. Rivolta, in 1889, expressed the suspicion that the bacilli found in avian and in mammalian tuberculosis belonged to two distinct species. Experiments conducted by Maffuci and others, confirmed this suspicion, and Koch, in his paper on "Bacteriological Investigation," read before the

Tenth International Medical Congress in 1890 at Berlin, cleared up still further the disputed matter. He stated that when making his original investigations, the tubercle bacilli from the most different sources not only presented the same microscopical appearance, and reacted to the same stains, but gave cultures indistinguishable from each other. From fowl suffering with tuberculosis, owing to his inability at that time to obtain fresh material, he was unable to produce any cultures; but, finding that the bacilli in their appearance and in their reaction towards the aniline dyes agreed fully with those of which he had made cultures, he felt justified in looking upon them as identical. Some time later he received from experimenters, whose veracity and ability were above suspicion, cultures stated to be pure cultures of tubercle bacilli, which differed considerably from those he himself had made, and producing on inoculation results quite distinct from those he had described. The first explanation which presented itself to Koch's mind was that these bacilli had been developed under unfavourable conditions, and consequently he commenced a series of experiments in which he watched the growth of his own bacillus at unusually high temperatures, and strove by adding chemical substances to his cultures, by varying the amount of moisture, by developing the bacilli along with other micro-organisms, by inoculating them on a number of slightly sensitive animals to produce growths identical with these puzzling forms. In these endeavours he completely failed, and the problem was not solved till he accidentally obtained some living fowl affected with tuberculosis. From these he made some cultures, and to his amazement found them to correspond exactly with those enigmatical varieties which had been sent to him, and consequently he now holds that avian tubercle bacilli, though closely related to human tubercle bacilli, constitute a distinct variety.

A very exhaustive and highly interesting series of experiments have been recently made on this subject by MM. Straus and Gamaleïa. By cultures and inoculations they have indisputably demonstrated the difference between the bacilli causing avian and those causing mammalian tuberculosis. Proceeding exactly by the method indicated by Koch, they injected some phthisical sputum into a guinea pig, and a fortnight later inoculated a series of tubes containing blood serum with portions of its enlarged glands. The tubes were kept at a temperature of 37·5° C., and after a lapse of two or three weeks minute, dry, scaly grains of a dull whitish colour, of firm consistence and possessing considerable cohesion made their appearance. Tubes of serum inoculated with portions of the organs of tubercular fowl presented, on the contrary, round, whitish, moist spots, softer in consistence, and with much less cohesion than those of human source. If these growths were transferred to tubes of glycerine-agar the difference was quite as marked. Gradually in each case the agar was covered over with a continuous whitish coating, which was surmounted in human tuberculosis with numerous warty elevations, but in fowl tuberculosis was provided with wrinkles and furrows. I think these coloured plates which illustrate Straus and Gamaleïa's paper make these distinctions quite evident, and I am happy, through the kindness of Professor Straus, to be in a position to submit to the Pathological Section of the Royal Academy of Medicine some of his pure cultures of human and of fowl tubercle bacilli on this the first occasion on which pure cultures of these micro-organisms have been exhibited to the Academy. Straus and Gamaleïa ascertained that the avian bacilli developed luxuriantly at 43° C., while the human bacilli ceased to grow if the temperature exceeded 41° C. They further obtained cultures of tubercle bacilli from a large number of the French laboratories, and found them invariably to correspond with those of fowl tuberculosis. Consequently nearly all the literature of the French school on the bacteriological aspect of tuberculosis has been based on experiments made with fowl bacilli, and may or may not be true of mammalian tuberculosis.

The characteristic lesions produced by the inoculation of these cultures on animals were even more striking than the differences in the cultures themselves. They submitted some 82 guinea pigs to experimental investigation. Of these 56 were inoculated with human tubercle bacilli, and 26 with fowl bacilli. Whether the method adopted was subcutaneous, intra-peritoneal, intra-pulmonic, or intra-venous, they found invariably that the animals inoculated with human bacilli presented at death a generalised eruption of macroscopically visible tubercles, hypertrophied caseous glands, and an enlarged yellow spleen; but if the bacilli were of an avian source there was no eruption of macroscopically visible tubercles; the bacilli were occasionally found in the organs, but the most constant lesion was a swollen red spleen. They experimented similarly on rabbits, and found that the usual pathological appearance in those animals injected with human bacilli was an eruption of tubercles, particularly abundant in the lungs, while the animals treated with fowl bacilli likewise succumbed, but presented no tubercles visible to the naked eye.

At one time an idea was prevalent that it was exceedingly difficult to produce artificial tuberculosis in dogs, in fact, more than one experimenter wrote that he knew no means by which an adult dog could be infected with tuberculosis, and consequently it was attempted by the injection of dogs' serum to render a rabbit immune to tubercular infection. Straus and Gamaleïa experimented on 15 dogs. They found, as Maffuci and Koch had previously shown, that an injection of a small quantity, say ¼ c. c. of an emulsion of human tubercle bacilli made into a dog killed him in one or two months, and at the *post-mortem* examination the lungs were found studded with miliary tubercles. On the other hand, comparatively large quantities of an emulsion of avian bacilli could be injected without producing any appreciable effect. True, if one used 20–30 c. cs. of a thick emulsion the dog wasted and died at the end of a month or six weeks, but no tubercles were visible at the autopsy, and death appeared to be due to a special intoxication.

Dogs are, therefore, excellent media for determining whether we are dealing with a culture of human or of fowl tubercle bacilli. In this, however, they are left far behind by fowl themselves. The difficulty, indeed, of infecting fowl with phthisical sputum has been often pointed out. Suffice it to recall the experiments of Straus and Wurtz, who fed eight hens for periods varying from six months to one year on expectoration containing numerous bacilli, and at the end of that time, though some of the fowl had consumed upwards of 45 kilogrammes of sputum, when they were killed they presented no tubercular lesion. Straus and Gamaleïa's researches were made on twenty pigeon and fowl. They injected considerable quantities of pure cultures of human tubercle bacilli under the skin, into the pectoral muscle, into the axillary vein, into the peritoneal cavity of these animals without producing any appreciable result; but an injection of a small quantity of avian tubercle bacilli produced rapid wasting and death at the end of a few weeks or months. At the *post-mortem* examination abundant bacilli were found in the organs, and sometimes an eruption of generalised tubercles. In fowl, therefore, we have animals absolutely and completely refractory to human tubercle bacilli, but succumbing easily to their own variety.

Out of these researches arises a very important question: "Are men susceptible to fowl tubercle bacilli?" To that question no direct answer can be given at present. So far as I am aware, in no case has a culture presenting features identical with those of fowl tuberculosis been obtained from a human subject, but as the distinction between the two varieties is of comparatively recent date, a sufficient number of experiments have probably not yet been made to justify a reply in the negative.

Of the prevalence and destructive tendency of human tuberculosis our hospitals and the returns of the Registrar-General afford convincing proof. Similarly, among the affections from which fowl suffer there is none more dangerous than tuberculosis. Should this disease appear in a farm-yard, the only effective method of stamping it out is to kill off all the members of that variety which has been attacked. Occasionally no less severe measures than the destruction of all the birds will rid the farmyard of this scourge. Farmers have, indeed, learned by experience the infective nature of avian tuberculosis, and recognised that they must resort to radical means to prevent a local outbreak becoming general, but the public are practically oblivious to the great risk of infection to which they expose themselves, while the phthisical portion of the community scatters broadcast sputa containing organisms remarkable for their resisting power to agencies generally destructive to the lower forms of life.

Men are most commonly infected by the inhalation of the dried expectoration of their fellow creatures; but from the distribution of the anatomical lesions in fowl it seems probable that infection occurs through the intestinal rather than the respiratory tract. An examination of the mucous surface of the former in a fowl which has succumbed to an attack of tuberculosis discloses numerous ulcers with infiltrated edges, while nodules of varying size are often found in or attached to the intestinal wall. These sometimes undergo caseous degeneration, discharge their contents into the tube, and produce a pouch or diverticulum communicating freely with lumen of gut. Thus a large quantity of cheesy material containing numerous tubercle bacilli is discharged per annum, and many foci of infection established. The appearance of the liver is even more characteristic. Scattered with some degree of uniformity over its surface are multiple whitish yellow patches. These differ considerably in size—some appear no larger than a pin's head, others have an area equal to that of a sixpence.

They extend also for varying depths into the substance of the liver, and seem to be as numerous in the deep as in the superficial parts. Notwithstanding the number and size of these new growths jaundice is an exceedingly rare complication. Out of several hundred birds examined by Mr. Bland Sutton[a] in only one was there any general deposition of bile pigment in the tissues. Microscopical examination shows that these masses consist generally of a central caseous area surrounded by giant cells, with many nuclei, in each of which the nucleolus is visible. Beyond these lies a zone of granulation tissue, which in the larger nodules has gone on to the formation of fibrous tissue, separating them sharply from the surrounding liver substance. The latter is occasionally infiltrated with small round cells, and is sometimes in a condition of amyloid degeneration. The bacilli may be found in the central caseous area, but are present more commonly and abundantly in the giant cells and granulation tissue. With the exception of the spleen, which contains nodules similar in appearance to those found in the liver, the remaining abdominal viscera are, as a rule, free from disease. In a few cases out of a large number examined by Mr. Sibley[b] there was a slight deposit at the hilum of the kidney or ovary. Though considerably over 1,000 birds have been examined by the above-mentioned observers, in only two cases did they find any deposit in the lungs visible to the naked eye. The lymphatic glands in the neck are by no means infrequently engaged; they undergo caseous degeneration, but do not suppurate or discharge externally. Mr. Sibley met with two cases presenting caries of the vertebral column, and one with hip-joint disease and an abscess cavity in the upper part of the thigh bone.

In the preparation of fowl for the market it sometimes happens that the internal organs are found to be in the above condition. This does not, however, so far as I have ascertained from those engaged in the work of preparation, in their opinion injuriously affect the bird, or render it in any way unfit for food, provided the disease be confined to the viscera. The safety of this practice may possibly be questioned, while it must be admitted that deposits in the joints are rare, and no observer seems to have detected them in the muscles.

In conclusion, let me say that the earlier part of the bacteriological summary is derived chiefly from one of Koch's original reports on tuberculosis (*Mittheilungen aus dem Gesundheitsamte.* Vol. II. 1884. Translated by Boyd in selected essays), while to Straus and Gamaleïa's highly instructive article in the *Archives de Médecine Experimentale* I am indebted for the greater portion of it.

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[a] Trans. Lond. Path. Society. Vol. XXXV. P. 477.

[b] Trans. Lond. Path. Soc. Vol. XXXIX. P. 464.

DIFFUSION OF VIRUS OF RABIES.

Dr. Giovanni Bombicci publishes, in the second fasciculus for this year of original memoirs of *Lo Sperimentale* (Florence, 30 April), a report of a series of experiments carried on in the pathological laboratory of the University of Bologna, to determine the time required for the diffusion of the virus of rabies from the point of insertion. From the practical point of view the determination is important, as helping us to know within what period local measures of treatment are likely to be efficacious, and remedial inoculations give best promise of success. Dr. Bombicci concludes from his experiments—that diffusion of the virus from the point of inoculation to the nervous centres is very rapid; that when inoculation is performed in the eye the virus passes from the anterior chamber to parts outside the eyeball in 24–30 hours; that the time is independent of the strength of the virus injected; and that when immediate death is obviated by the removal of the part inoculated, the fatal effect may be retarded for a variable number of days. He infers that after infection with this virus there is a period within which local treatment may be efficacious, and antirabic inoculations will have a better chance of success. This period, however, at any rate in the rabbit, is extremely short.

"THE CORPUSCLE."

This monthly professes to be the representative literary organ of the students of Rush Medical College, Chicago. It claims to be the first medical students' journal that the world has seen. It has "come to stay" (it says), not being of "mushroom growth." It is adorned with portraits of its eight editors. The contents are very much what might be expected—a mixture of grave and gay. We infer from one of the leading articles that politeness to lady students is not enforced by the public opinion of the school. "A lady cannot come to a lecture without being made either a target for direct or indirect insult. A whisper, a word, a grin, or that most cowardly of all, a note is directed at her"—unless she is accompanied by a "stalwart protector." From a paper recommending the military medical service of the United States, we learn that an Assistant Surgeon, on appointment, draws £320 a year, with free quarters; after five years' service, £400. On promotion to rank of Surgeon (after examination), the pay is £500; with an annual increase of 10 per cent. up to 40 per cent.

PART II.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

The Structure and Functions of the Brain and Spinal Cord, being the Fullerian Lectures for 1891. By VICTOR HORSLEY, B.S., F.R.C.S., F.R.S. London: Griffin & Co. 1892, Pp. 223.

THESE lectures form the first instalment of a work on the central nervous system. The present volume deals only with the spinal cord and ganglia. In subsequent courses of lectures the author intends to describe the structure and functions of the cerebrum and cerebellum, and to discuss the recent advances which have been made in the science of physiological psychology.

After a short, but very interesting and appreciative historical sketch of the growth of our knowledge of nervous physiology, the author examines the nervous systems of some invertebrate animals. In protozoa, although no nervous system has been demonstrated anatomically, yet the responsive movements on stimulation, the apparent choice in these movements, and the rhythmic pulse observed in the contractile vesicle, are all phenomena, which in higher animals are supposed to point to nerve action. In hydrozoa the simple nervo-muscular apparatus described by Kleinenberg is well known. But it would appear that there is a greater differentiation of parts than was at first supposed, since "there is reason to believe that in the hydra there is not only distinct muscular tissue, but that there are also cells of the ectoderm which have more specially to do with the reception of impressions, and other cells which mechanically support the former." "In any case, we see here the beginning of a system which runs right up through the animal scale to man—viz., the provision of a sense organ—*i.e.*, nerve-cell in its elementary state in the periphery or external part of the body, which receives external impressions and communicates them to the interior, with the result that a movement follows."

Passing to the medusæ, it is shown that the source or initiation of the rhythmic movements of the bell are to be sought in the marginal sense-organs; that on removal of these the bell is paralysed, and also manifests a loss of tone; that the paralysed bell will manifest rhythmic contractions when artificially stimulated, and that these contractions alter in character when the stimulation is prolonged. Besides these phenomena, medusæ respond by different and appropriate movements to localised stimulation. In all these respects it manifests properties referable to a nervous system. As to the vexed question of the source of the rhythmic movements, whether in the ganglionic cells, nerve-endings or muscular tissue, the author thinks the weight of evidence shows that the movements in question are due to the possession of a nervous system.

An account is given of the important observations of Romanes and Ewart on the movement of echinoderms, and it is pointed out that in these animals we have in the central nervous ring the first construction of a centre for co-ordinating nerve impulses and producing co-operation.

In arthropoda we find a bilaterally symmetrical nervous system connected by commissures. The two first ganglia are the most important and correspond somewhat to the brain in vertebrates. "These two first ganglia exhibit in a remarkable way the great principle of nerve functions of which we have as yet seen but little—namely, the precise localisation of action in definite parts of the nervous system, or, as one naturally prefers to say, in special nerve-centres. We are also justified from these experiments in concluding that in these animals the nervous system in each of its conjoined halves subserves practically the functions of only that side of the body in which it happens to lie. We have, therefore, not only localisation of function, but also proof that in the systems in which that is first well marked, there is concurrently exhibited a unilateral character of the representation of movement in the nerve cells."

In commencing the description of the nervous system in vertebrates (amphibia, birds and mammals) the following important caution is given:—"In all cases where we are dealing with the functions of similar organs in different orders of animals we can avoid error if we classify the points to be elucidated into a first division of general principles, and follow that by succeeding divisions, gradually introducing more and more details. What is true of one order, as regards the first of such divisions, is undoubtedly true of another; but when mistakes have been made they have followed the indiscriminate application of facts from one animal to explain events occurring in another, without reference to the division of principles such as that I have indicated."

A short anatomical description follows of the anatomy of nerve fibres, and of their principal terminal organs. Then the nervous system of the frog is described, and the crossed action of the brain on lower parts, as in the decussation of the optic nerve, and of the motor conductors to the muscles of the limbs. The great development of commissural connections between the different sides of the nerve-centres is dwelt on, and it is shown that although unilaterality of representation prevails, there is a possibility of a certain degree of bilaterality becoming developed.

A good account is given of the structure, and of the little we know of the functions of the spinal and sympathetic ganglia, and the changes which occur in a nerve during its activity are detailed in accordance with the latest investigations. In the discussion of the general principles which underlie the action of simple nerve-centres—such as those of the spinal cord—it is pointed out that, with the exception of the connection between the fibres of the anterior roots with the ganglionic cells of the anterior horns, we do not know the attachments of the nerve-cells either with one another or with the nerve-fibres. Consequently, of that structure, the "field of conjunction," which lies between the afferent and the efferent side of the centre, we know nothing except that it is a place of high resistance, or the seat of a block to nervous impulses.

The character of the discharge from nerve-centres as contrasted with that due to the direct stimulation of a nerve, is dwelt on. Its gradual character, its successive or rhythmical character and low intensity are pointed out. The inferences as to the intensity are derived from the researches of the author and Prof. Gotch, and are one of the most interesting results of this most important investigation. This low intensity, as shown by the electrical method, is important—"because we see that it may be possible in the future to find out some relation between the discharge from nerve-centres and the amount of muscular force which is evoked, and in this way, by some considerations allied to those upon which the conservation of energy is based, aim indirectly at a rough physical conception of nerve-energy itself."

Another very unexpected and interesting result of this investigation is an experimental confirmation of the old view of Dr. Bastian, that the origin of nerve-energy is to be looked for not on the efferent or so-called motor side, but on the afferent or sensory side of the nerve-centres. Professors Horsley and Gotch found that the excitation of the spinal nerve-centres was conveyed up the cord as a stream of nerve-impulses in the posterior half of the organ and not in the ventral side. "To our surprise, and, I must add, strongly against our preconceived notions, we discovered that the nerve-energy of a discharging nerve-centre overflowed down the posterior or afferent roots, as well as of course going down the ordinary efferent paths. This shed at once a new light on the whole subject as to the source of energy in the nerve-centres, because knowing as we did from our other experiments that impulses would pass up most easily the posterior side of the spinal cord, and would only issue through the nerve-centres in a very diminished degree, it was clear that the field of conjunction must afford a considerable block, and that therefore if there was an overflow down the posterior roots, that overflow could only be reasonably surmised to come from a source of energy situated in the afferent side of the centre. It occurred to us to test this by a new way altogether, and that was to see whether nerve-impulses would pass backwards through a nerve-centre. This we effected very easily by simply applying our electrodes to the efferent or so-called motor channel—namely, the anterior root—and connecting the upper part of the spinal cord with the galvanometer so as to reveal the slightest amount of nerve-impulses that might pass up the cord. We then discovered that nothing whatever passed up the spinal cord when we thus excited the anterior root. The block, therefore, that we spoke of just now as existing in the field of conjunction, must be of a very extreme character for anything in the way of an impulse trying to pass backwards from the large nerve-cells of the anterior horn. In this way you see we are brought logically back again to our original position—viz., that it is the afferent side of the nerve-centre which is the source of nerve-energy."

In the last two lectures different centres in the cord and medulla oblongata are considered. Our space will not allow us to follow the author through this consideration further than to give another result of the important work with which he and Professor Gotch have enriched physiology. The paths of afferent conduction in the cord are very obscure, and the results of direct experiments have been discrepant and doubtful. By the electrical method it has been found "that 80 per cent. of the afferent impulses travel up the same side of the cord, the 80 per cent. being made up of 60 per cent. of the total going up the posterior column, and 20 per cent. going up the lateral column; while of the remaining balance more than 15 per cent. passed up the posterior column of the opposite side, and a trace up the lateral column of that side."

In conclusion, we cannot speak too highly of these lectures. Although modestly called by the author merely an elementary review of the subject, they abound in originality of thought and suggestive matter, while the admirable arrangement of the subject, and the clearness and terseness of the style, cannot fail to charm the reader whether he be a physiologist or not.

On Common Neuroses, or the Neurotic Element in Disease and its Rational Treatment. Three Lectures delivered before the Harveian Society of London, November–December, 1891. By JAMES FREDERIC GOODHART, M.D. London: H. K. Lewis. 1892. Pp. 128.

THE author of these most readable lectures is impressed with the widely-prevailing influence of the neurotic element in the production and carriage of disease, and thinks that this influence is now more all-pervading than in former years. He is further of opinion that the grit of the English constitution has lessened in robustness, and that, while the average duration of life has increased, healthy life has diminished. He is convinced "that the maladies which owe their origin to a faulty action of the nervous system are of more frequent occurrence in practice than are even phthisis, heart disease, Bright's disease, or organic hepatic disease."

He divides his subject into the following groups:—"The common neurotic conditions which may be said to be essentially central in their whole course; those that are respiratory; those that are cardiac and circulatory; and those that are abdominal, concerning themselves with the stomach and bowel and liver and kidney."

It would be impossible for us to follow him through all the subject, and we should be sorry to spoil what he says with such clearness and force by any attempt at analysis or abstract.

While admitting the truth of most of what he says, in many details we are unable to go with him. He nowhere attempts to define accurately what he understands by a neurosis, and therefore it is not always easy to be sure of what he exactly means, but it must be something very comprehensive if we are to accept his statement that "there are only two forms of indigestion—that produced by over-eating and drinking and that due to failure of nervous power;" and if by a neurosis the stomach can manufacture sulphuretted hydrogen, or secrete other kinds of gas, and cholesterin can separate from the bile. However, instead of complaining of those few points, in which we think the author has let his subject run away with him, we would prefer to quote a few passages with which we most cordially agree, and which will at the same time give such an idea of the style of the work as will, we are sure, induce many to read it from first to last as we have done with increasing pleasure and interest:—

"And here may be said what need be with reference to uterine and ovarian neuralgiæ. I have said it is a bad day for a man when he first knows he has a heart; it is a ten times worse day for a woman when the pelvic pains, to which so many are subject are focussed for her by medical opinion upon uterus or ovary. If there is anything that curdles my blood it is to hear a woman talk of her ovaries as she might of some intimate acquaintance. One cannot, of course, suppose that organs fulfilling such important functions should have no liability to the aches and pains that all flesh is heir to, or even that they are free from a large measure of disease. We know that it is not so, but there can be no doubt that the ovaries are organs that largely concern themselves with functional disease, and with forms of it, too, that penetrate into the inmost recesses of the patient's being. Do we always remember this at the present day, with all the prevalent means of treating disease locally? Do we not sometimes undertake local treatment hazardously, I mean as regards the chances of *real* improvement, because it can be effected with so little risk to life? Is it not too often 'It cannot do any harm, and it may do good?' Surgery can happily accomplish now much of what it undertakes; but it needs to remember that it has not yet attained to the enucleation of the neurotic constitution. And when I see, as I have seen, the uterine appendages removed for an apparently incurable neuralgia, I see in the measures adopted not the advance of scientific surgery, as some might suppose, but the abasement of the patient, who has been obliged to yield to the force of circumstances" (p. 121).

"In taking leave of my subject let me remind you of what has been my aim in these lectures. It was, in giving you a clinical exposition of the common neuroses, to lay stress on the very certain fact that there are limits to the treatment of this class of diseases by drugs and operation, and that there are many conditions in which the cure must come mainly from within, our function in chief being to call out this dormant power. I wanted to insist, because I am sure that at the present day we are too likely to forget, that the highest position we can take is to cure people by advice rather than by drugs, to make the public pay for the use of our brains, and not for a prescription of so many ounces of physic." "There is a time to give drugs, and even to give them with a free hand, but there is equally a time when advice only is needed, and not physic—shall I stop there? no, when to give drugs is quackery! Yes, there are times when to give medicine is to give *poison*, for it sends the poor patient on a hunt for health which no physic will procure, and it lets slips the opportunity—in the exigencies of human pain, and of suffering of all kinds, too seldom fit—of pointing the ignorant to a future of medicine which both for us and for them is an ideal to be hoped for, to be striven for" (p. 126).

Modern Materia Medica for Pharmacists, Medical Men, and Students. By H. HELBING, F.C.S. Third enlarged Edition. New York: Lehn & Fink. London: *The British and Colonial Druggist.* 1892. 8vo. Pp. 202.

THE principal subject-matter of this work is the discussion of the chemistry, the pharmacology, and the therapeutics of that interesting class of modern remedies known as synthetical compounds.

That some such book was called for is evidenced by the fact that the work before us not only has run through three editions in a wonderfully short time, but also has vastly increased in size. It is divided into two parts—"Modern Materia Medica" and a lengthy "Appendix," this latter containing an account of those compounds which seem to be at present of insufficient importance to require detailed description in the first part of the work, as well as of those which are not purely synthetical remedies.

At the close are three elaborate tables giving the doses of selected new remedies at different periods of life, their solubility in water and spirit, and their melting and boiling points in centigrade degrees. A well arranged index concludes the book.

There is a general outcry against the fanciful names which have been given to many of the synthetical remedies of the present day—but they have really been rendered necessary by the outlandish nomenclature of chemical synthesis. For example, it is better to speak of "antipyrin" or "phenazone" than of "dimethylphenylpyrazolon," or "dehydrodimethylphenylpyrazin;" of "europhen" than of "di-isobutylorthocresol iodide;" of "orexin" than of "phenyldihydrochinazoline hydrochloride;" of "saccharin" or "gluside" than of "benzoyl-sulphonic-imide;" of "sozoiodol" than of "diiodparaphenolsulphonic acid;" and of "sulphonal" than of "diethylsulphondimethyl-methane." One of the newest antipyretics is called "ortho-oxyethel-ana-mono-acetylamidochinoline." These compound words ("jaw-breakers," as they were called in our school-days) remind one of the *σπερμ-αγοραιο-λεκιθο-λαχανο-πῶλις*, the "*green-grocery-market-woman*" of Aristophanes; or of his *ὀρθρο-φοιτο·συκοφαντο-δικο·ταλαίπωροι τροποι*, "*early-prowling, base-informing, sad litigious, plaguy ways.*"

In the so-called "Appendix" will be found a series of short but very valuable articles, including new compounds of bismuth, gold, mercury, zinc, and quinine, a number of salicylates, and, of course, "tuberculin" and "tuberculocidin."

We congratulate Mr. Helbing on the manner in which he has executed his self-imposed task.

Saunders' Question-Compends. No. 22. Essentials of Physics. Arranged in the form of Questions and Answers. Prepared especially for Students of Medicine. By FRED. J. BROCKWAY, M.D.; Assistant Demonstrator of Anatomy at the College of Physicians and Surgeons, New York. Philadelphia: W. B. Saunders. 1892. Pp. 330.

IN the number of this Journal for September we noticed with approval Nos. 20 and 23 of Saunders' "Question-Compends." The author of the "Essentials of Physics" (No. 22 of the same series), Dr. Fred. J. Brockway, of New York, appears to have discharged his duty with equal success, and—as he himself says—to have compiled a book which is a mean between Ganot's treatise on the one hand and some elementary text-books on physics which do not contain all that it is necessary for a medical student to know.

Opening with a full list of abbreviations, the work is divided into five books—on matter and its properties, heat, light, sound, magnetism, and electricity. The amount of ground traversed is, therefore, marvellous. The answers to the different questions are given as a rule clearly and in concise language. In many cases pictorial illustrations lend their aid to the student; these have been taken by permission from Ganot's *Physics*, Gage's *Elements of Physics*, and Atkinson's *Dynamical Electricity*.

Although in general we have no great liking for royal roads to learning and "Students' Aids," we are bound to confess that in Saunders' "Question-Compends" medical students possess a sound and reliable guide to knowledge; nor is Dr. Brockway's work an exception. We have practically tested its utility in the case of candidates at a Prize Examination in Physics, and have not found it wanting.

Year-Book of the Scientific and Learned Societies of Great Britain and Ireland, comprising Lists of the Papers read during 1891 *before Societies engaged in Fourteen Departments of Research. with the names of their Authors.* Compiled from official sources. Ninth Annual Issue. London: Charles Griffin & Co., Limited. 1892.

FOR all engaged in the literary branch of medicine this Year-Book is, we think, necessary. We need not dilate on the advantages of having an index of the papers read during the year on medicine and all the collateral branches of science. Time and trouble is saved, and a more full and accurate paper can be produced than is possible by unaided research. It is a synopsis of the work done in fourteen departments of science, and shows at a glance the progress of the year in scientific subjects, and all who are interested in promoting science will find it a reliable, well arranged, and useful book of reference.

On the Medical and Surgical Uses of Electricity. By GEORGE M. BEARD, A.M., M.D.; and A. D. ROCKWELL, A.M., M.D.. formerly Professor of Electro-Therapeutics in the New York Post Graduate Medical School and Hospital; Fellow of the New York Academy of Medicine; Member of the American Academy of Medicine; Member of the New York Neurological Society; formerly Electro-Therapeutist to the Woman's Hospital of the State of New York, &c. Eighth Edition. With over two hundred illustrations. London: H. K. Lewis. 1891.

WHEN an eighth edition of a book is reached it may fairly be said to have passed out of the province of the reviewer. In the present case there is little left for us to do other than point out the differences which distinguish this edition from the seventh. The chapters upon diseases of women, electrical apparatus, static electricity have been largely recast, additions made to the chapter on electro-diagnosis, and many new and improved illustrations, representing practical and important methods of application, supply the places of the old ones, and some old matter has been dropped out.

Electricity has not performed the wonders its advocates hoped for from it; nevertheless it has a useful place in medicine, both as a therapeutic remedy and as an aid in diagnosis.

Influenza: its Pathology, Symptoms, Complications, and Sequels; its Origin and Mode of Spreading; and its Diagnosis, Prognosis, and Treatment. By JULIUS ALTHAUS, M.D., M.R.C.P. Lond.; Senior Physician to the Hospital for Epilepsy and Paralysis, Regent's Park. Second Edition, much enlarged. London: Longmans & Co. 1892. 12mo. Pp. 407.

THIS complete and valuable treatise on influenza appears when—we must not say "unfortunately"—the disease has ceased to trouble us, and its value is rather historical than practical. The author seeks to "Americanise our institutions." He calls his subject "influenza" as little as possible, preferring "grip"—which appears to us, we confess, the less of two evils—and forming from it an uncouth series of derivatives—"gripped," "grippal," "post-grippal," even "grippo-toxine"—which will make many shudder. He is addicted also to the American use of "recuperate" intransitively, which is "un-English," and, therefore, intrinsically infamous. But let us consider, as it deserves, what Dr. Althaus says, not how he says it. Though the immediate danger has passed away recurrence of the epidemic is always possible; and few will agree with Broussais, who, in 1889, published his opinion in the *Revue Générale de Clinique et de Thérapeutique*, that influenza was "an invention of needy people, of doctors without patients, whose time hung heavily on their hands, and who had amused themselves with inventing such a bogey." After a short chapter on the bacteriology of the disease, in which the opinion is expressed that the symptoms are due to the presence in the blood of a poisonous albuminoid secreted (or excreted) by a specific bacillus, the symptoms of the attack are described, and it is argued that it is an infectious *nervous* fever. It is pointed out that the nervous sequelæ of influenza are more numerous than those of any other febrile disease, or even than all of them put together. "As a powerful ætiological factor of protean forms of nerve-disease, influenza stands *facile princeps* amongst all infectious fevers." Although there are three distinct forms of the disease—encephalic, thoracic, and abdominal—the differences of manifestation are not essential, and influenza is always fundamentally a nervous fever. One of the most prominent characters of the disease is the extraordinary degree of nervous prostration which it induces, and this leads the author to a theory that the specific poison has a special effect upon the cardiac and respiratory centres in the bulb. Why the "grippo-toxine" should have a special influence on these centres can only be answered by pointing to analogous cases, such as strychnin, tetanus, lead, &c. Is there any pathological evidence in support of this theory? In the asylum of Aarhus, in Denmark, 41 cases of influenza occurred, of which 11 were fatal. In all these "was found intense hyperæmia of the pia mater and brain, such as is never seen in any other cases, and this was more particularly marked at the base of the brain." Goodall's report of 18 autopsies made in the Wakefield Asylum does not give similar results to these of Helweg, but Maillart's, in the Genevan Cantonal Hospital, are confirmatory of the theory. In all Maillart's cases "in which notes of the condition of the brain were taken definite lesions were found, implicating either the membranes, or the blood-vessels, or the substance of the brain."

In connection with influenza a peculiar disease, to which the name of Nona was given, appeared in North Italy and Switzerland, and attracted a good deal of attention. It was characterised by profound somnolence, supervening upon or coincident with the primary influenza, and generally fatal. It appears to have been a form of cerebro-spinal meningitis consequent on influenza. Several cases recorded by foreign physicians are given by Dr. Althaus in this second chapter.

On one point the author differs from all other physicians who have treated of this disease. Maintaining that a specific virus, which he calls "grippo-toxine," is the principal cause of the psychoses which occur during or after the influenzal attack, he denies the necessity for neurotic predisposition, hereditary or acquired, in the patients affected by such complications. In 107 such cases neurotic predisposition was traceable in 62·8 per cent. "Predisposition, therefore," he says, "although undoubtedly an important adjuvant in the production of these psychoses, is plainly shown not to be their exclusive ætiological factor." He considers that "individual idiosyncrasy is carried to a very high pitch in the response of patients to the action of grippo-toxine," and attributes to it, unaided by predisposition, the mental disorders which unquestionably follow influenza in greater proportion than any other infectious disease. He suggests also that the specific virus of influenza may have a specially deleterious effect upon the grey matter of the cortex.

The fourth chapter is devoted to the origin and mode of diffusion of the disease. Tessier regards it as endemic in Russia, and attributes it to the unsanitary habits of the people, which, however, prevail elsewhere without producing influenza. Others trace it to the Manchurian inundations of 1888 and 1889 in China; but it is in evidence that China is indebted for infection to the English mail steamer which arrived at Hong Kong with cases on board in January, 1890. Others blame, with even less reason, the Krakatoan eruption of 1883. We may cheerfully acquiesce in ignorance of its origin. Its mode of spreading is of practical importance, and we shall give in Dr. Althaus' own words his conclusions on the subject (p. 285):—

> "Influenza is an infectious disease, owing in the first instance to the development of Pfeiffer's bacillus outside the human system. Under the influence of certain conditions, with the nature of which we are as yet unacquainted, this bacillus increases and multiplies to such an extent as to become the efficient agent in causing influenza. After this has once commenced it easily spreads from one person to another, in the same way as measles, small-pox, or scarlet fever, either by actual contact or by 'fomites,' that is, infected materials, such as clothing, or goods of any description which may have become imbued with Pfeiffer's bacillus. With regard to its progress, grip follows the established lines of human intercourse, and spreads at about the same pace as men are in the habit of travelling at those times and places where it becomes epidemic. It has nothing to do with meteorological conditions; advances independently of climate, season, wind, and weather; and affects large masses of the population at the same time, for the following reasons:—1st, because it has a very short period of incubation—viz., about two days; 2nd, because men are exceedingly susceptible to infection by this particular bacillus; and, 3rd, because the bacillus is propagated not only by persons who are ill in bed, but by many people who have the complaint in a mild form, and therefore continue to move about and pursue their ordinary avocations, thus forming focuses of infection for all those who may happen to come in contact with them. Germs or spores of the bacillus may remain undestroyed for a considerable time, and may, under the

influence of favourable conditions, lead to fresh multiplication of the bacillus, and therefore to fresh outbreaks of the disease."

We observe with pleasure that Dr. Althaus argues—at unnecessary length, it seems to us—against the identity of influenza and dengue. It is enough to say that dengue is attended by one or two eruptions, while in influenza cutaneous symptoms are rare exceptions.

A very copious list of bibliographical references, an index of authors, and index of subjects complete this excellent work.

The Drainage of Habitable Buildings. By W. Lee Beardmore. London: Whittaker & Co. 1892. Pp. 89. Illustrated.

This is a reprint of papers which appeared in a technical journal during the past ten years. It contains in a condensed but readable form a good deal of information about the construction of drains and the disposal of sewage. It is not sensational enough to attract the attention of the careless, or large enough to act as a book of reference, but for thoughtful readers, who wish to keep "up to date" in practical sanitation, this book will be found useful, and we can recommend it to medical men whose advice on sanitary matters is so frequently sought and valued.

The Maritime Provinces of Canada. A Handbook of General Information. Published under the authority of the Canadian Government. London: M'Corquodale & Co. 1892. 8vo. Pp. 122.

The object of this pamphlet is to supply more detailed information respecting the agricultural and other resources of the Maritime Provinces of Canada than is given in the general pamphlets issued by the Dominion Government. The work is also intended to complete the series of the reports of the tenant-farmers' delegates on the agriculture of the Dominion in 1890, in which year the members of the delegation had not sufficient time at their disposal to visit Nova Scotia, New Brunswick, and Prince Edward Island.

The statistical and general information stored in the pages of this useful "pamphlet," and especially a chapter containing advice to intending emigrants, will no doubt prove useful to those persons who may be contemplating settlement in Nova Scotia, New Brunswick, or Prince Edward Island. Any further information respecting these Maritime Provinces or other provinces of the Dominion may be obtained on application to the High Commissioner for Canada, 17 Victoria-street, London, S.W., or to any of the Government agents in Great Britain or Canada, whose names and addresses will be found on page 116 of the "Handbook."

Transactions of the Medical and Chirurgical Faculty of the State of Maryland. Ninety-third Annual Session, held at Baltimore, Maryland, April, 1891. 8vo. Pp. 397.

THIS Faculty was originally a corporation chartered for conferring qualifications in medicine and surgery, and, in its early years, was the only door that led to professional practice in Maryland. Its legal rights as a licensing body are in abeyance, without prospect of revival; and the Faculty is now only an ordinary medical and surgical society, meeting to hear addresses, papers, &c., twice a year. Our notice of the number of its Transactions now before us is so belated that we shall merely call attention to the Report of the Section on Ophthalmology, Otology, and Laryngology, which is devoted to the remarkable increase of blindness in the United States. "An increase out of all proportion to the simultaneous growth of population."

In the Transactions of the *American Ophthalmological Society* for 1887 Dr. Lucien Howe, of Buffalo, published a paper on the subject. Comparing the Census of 1870 with that of 1880, he pointed out that in the decade the population of the United States had increased 39·09 per cent., the number of blind 140·78. He found that the blindness rate increased from north to south, and decreased from east to west. Blindness is most prevalent in the eastern States, and more prevalent there in the thickly populated than in the rural districts. He estimates the financial loss due to blindness in 1880 at £1,600,000. One result of Dr. Howe's paper was the appointment of a Committee "to enquire into the correctness of these statistics, and to find the causes of this increase in the number of the blind." It was ascertained that in the State of New York population had increased in the decade by 15·9 per cent., blindness by 125·7. Blindness had increased 8·2 as rapidly as population. In Maryland State, in the same decennial period, population had grown about 20 per cent., blindness 121.

As to causation—the committee found that in New York State, omitting 2·27 per cent. congenitally blind, 43·01 per cent. was due to four diseases, "two of which, ophthalmia neonatorum and sympathetic ophthalmia, are preventable by prophylaxis, and three, ophthalmia neonatorum, and trachoma, and corneal disease, either altogether curable, or capable of marked benefit, if proper treatment be instituted soon after the diseases are established."

Ophthalmia neonatorum, a preventable disease, and generally curable if treated early, is the cause, according to Magnus, of 23·5 per cent. of cases of European blindness under twenty years of age; of 10·87 per cent. of all cases in Europe; of 14·51 per cent. of the blindness in New York State; and of 17·5 per cent. of the blindness in Maryland schools.

Dr. Coltman on "The Chinese."

In our review of this interesting work, which appeared in our number for September (page 217), we omitted to mention that the publishers are the F. A. Davis Company of Philadelphia and London. The volume does credit to the enterprise and world-wide reputation of this firm.

TRACHEOTOMY IN FLORENCE.

Lo Sperimentale of March 15, 1892, reports a meeting of the *Accademia Medico-fisica Fiorentina*, held on March 7th. Professor Bajardi communicated the result of 115 tracheotomies, 63 performed for idiopathic croup and 52 for croup complicated with faucial and nasal diphtheria. Of the former group 42·85 per cent. recovered; of the latter, 34·61; of the total, 30·13. Death occurred most frequently from the 1st to the 4th day after the operation. In 5 cases the patients died on the table, of whom 3 were moribund from protracted asphyxia.

COMPRESSED MEDICINES.

The United States War Department has contracted for 200 chests of compressed medicines for use in the army and navy. Each chest—23″ × 14½″ × 17¾″—contains 60 square bottles of different medicines, in compressed tablet form, none larger than an ordinary peppermint lozenge. If the contents of the chest were liquefied to their customary bulk one half of a regular railway truck would be necessary for stowage. Two chests, one "medical supply," the other "surgical," are allotted to each battalion of 200 men. The weight of each chest is 85 lbs. Whisky, brandy, alcohol, and castor oil are carried in the liquid condition; but cod-liver oil is compressed.

PART III.

MEDICAL MISCELLANY.

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Reports, Transactions, and Scientific Intelligence.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

President—George H. Kidd, M.D., F.R.C.S.I.
General Secretary—W. Thomson, F.R.C.S.I.

SECTION OF PATHOLOGY.

President—C. J. Nixon, M.D.
Sectional Secretary—J. B. Story, F.R.C.S.I.

Friday, May 13, 1892.

Mr. F. A. Nixon in the Chair.

Chronic Tubercular Spinal Meningitis.

Dr. H. T. **Bewley** showed a spinal cord from a case of chronic internal tubercular panchymeningitis. The disease lasted four years, causing complete loss of motion and partial loss of sensation in the legs. At first there had been marked inco-ordination with increased reflexes, but afterwards the reflexes culminated in permanent rigidity. Four years after the paralysis showed itself, the spine became curved, the tenth dorsal spine becoming prominent. This singular curvature became rather more marked. Finally he died of tubercular meningitis. At the *post mortem* examination it was found that the external surface of the dura mater was healthy; the internal surface was thickened. This thickening was most marked in the lower dorsal region, where there was about one-sixth of an inch of tough, whitish tissue growing from the dura and attached to the arachnoid and pia mater. This tissue thinned off gradually above and below. On microscopical examination this tissue was seen to consist of granulation tissue containing giant cells, and tubercle bacilli, and in many places had become caseous. This tissue compressed the cord in the lower dorsal region. The cord showed ascending and descending degenerations above and below this point. The ninth, tenth, and eleventh dorsal vertebræ were carious, and there was cerebral tubercular meningitis. The disease had started in the internal surface of the dura mater, and the bone disease was secondary. That this was the course of the case is shown by the following facts:—(1) The external surface of the dura was healthy, the internal diseased. (2) The spinal disease did not show itself till three years after the paraplegia had become complete.

Horny Epithelial Tumour.

Dr. Arthur Benson showed a tumour which he had removed from the outer side of the left brow of a woman, aged about thirty, in St. Mark's Ophthalmic Hospital. It was not adherent either to the skin or the bone, and was removed under the impression that it was an ordinary dermoid tumour. It had been present all her life, and except for the disfigurement, was no trouble to her, though she thought it was growing a little larger. The tumour was oval, and about three-quarters of an inch long and half an inch wide.

Dr. Graves showed microscopic sections of the horny epithelial tumour. The tumour was completely invested by a strong fibrous capsule which sent in many trabeculæ, dividing off the masses of epithelial cells of which the tumour was composed. The great bulk of these epithelial cells were horny. In one place these horny cells were seen to be directly connected with a mass of Malpighian cells. This tumour was precisely similar, in macroscopic and microscopic appearance, to a tumour removed from the neck by Mr. Wheeler, and exhibited last year at the Pathological Section of the Royal Academy of Medicine (*Transactions*, Vol. IX., page 428).

Artificial Dental Caries.

Dr. A. W. W. Baker read a paper upon artificial dental caries, and showed microscopic specimens. [It will be found at page 200.]

Perforating Ulcer of Stomach.

Dr. Joseph Redmond exhibited a case of perforating ulcer of the stomach in a male aged sixty. On opening the stomach it was found to contain two solutions of continuity, the larger of which, situated on the posterior wall, measured 4 inches × 2½ inches. The floor of the ulcer was formed by the pancreas, to which it was intimately adherent. The smaller ulcer was situated about one inch to the lower and mesial side of the œsophageal opening, and separated from the larger by a distance of about 1½ inches. Its shape was nearly circular, and was about one inch in diameter. Its floor was irregular, without any trace of hæmorrhage, and at one corner was the perforation which had occasioned the fatal termination.

Pedunculated Sarcoma of Cerebellum.

Dr. M'Weeney read a paper on a case of pedunculated sarcoma of the cerebellum which had occurred at the Mater Misericordiæ Hospital. The patient, J. S., had been admitted on Jan. 11 to the Mater Hospital under the care of Mr. Hayes, suffering from persistent vomiting and headache, and from debility and insomnia, the result of these symptoms. Twelve months previously he had been unconscious for two hours after a severe fall, but apparently recovered his usual health till about four months previous to admission, when the vomiting began to be troublesome. On examination the right side of the tongue was found insensible to impressions of taste, and there was almost complete deafness of the right ear, which he had noticed only three weeks before admission. The right pupil was larger than the left, and reacted to light. There was no optic neuritis and no facial paralysis. Cough was troublesome, and there was a certain amount of bronchitis. Urine small in quantity, of sp. gr. 1032–36. Urates present in abundance, no other abnormality. Bowels confined; temp. occasionally rose to 100°–101° F. Skin always dry. The patient became suddenly comatose and died on the 29th of Jan. *Post-mortem*—a disc-shaped pedunculated tumour was found on the right side of the under-surface of the cerebellum. Its inner aspect was closely oppressed to the crus, pons, and medulla, which were flattened and distorted by the pressure. The tumour lay in front of the amygdala of the cerebellum. The exact shape of the tumour was that of a somewhat crumpled and convoluted roughly circular disc, of which one surface looked upwards and inwards, the other downwards and outwards. The diameter of the disc was 1$\frac{3}{4}$ inch; its thickness averaged $\frac{1}{3}$ inch. Its peduncle was very riband-shaped, and entered the cerebellum about the region of the flocculus, slightly posterior to the roots of the facial and auditory nerves. The bulging caused by the passage sideways of the superficial fibres of the pons was quite obliterated by the tumour, and the 7th and 8th pairs of nerves were adherent to the upper surface of the disc. The pneumogastric and glossopharyngeal nerves were adherent to the posterior edge of the disc, flattened and disintegrated into small bundles of fibres. The peduncle of the tumour seemed to run into the white centre of the cerebellum, and near the upper surface of that organ in the quadrate lobule was a remarkable vascular condition consisting of a plexus of large thin-walled veins ($\frac{1}{5}$ inch diameter), lying both in the medullary substance and in the gray matter of the sulci. Microscopic examination showed the tumour to be composed chiefly of sarcoma-tissue, the cells being of various shapes, the nuclei close-packed, oval, vesicular or epithelioid. There was no definite grouping of the cells, and round the large venous blood-spaces which abounded in the sections, the cells were affected for some distance with hyaline degeneration. The cortical substance of the cerebellum, with its two layers and intervening Purkinje's ganglion, cells were found by serial sections to extend on the outside of the tumour for some distance, the nervous layer gradually becoming thinner and thinner. The cerebellar cortex in the neighbourhood of the peduncle of the tumour showed no microscopic change save thinning of the layer of granules, and a certain amount of diminution in the number of medullated fibres. The area occupied by the venous plexus was, save for its presence, healthy, the nerve fibres coming right up to the margins of the large veins. Dr. M'Weeney demonstrated a series of sections from different parts of the growth, stained with Delafield's hæmatoxylin and eosin, picrolithio-carmine, Weigert's and Pàl's methods, and with Sahli's borax-methylene-blue.

Ovarian Cyst.

Dr. Graves showed an enlarged prostate, dilated ureters and diseased kidneys with microscopic sections, for the President of the Royal College of Surgeons in Ireland.

Dr. Graves also showed a large multilocular ovarian cyst for Dr. Wheeler.

(*a*) *Dry Gangrene of Finger in a Patient, aged Fifteen;* (*b*) *Lacerated Wound of Heart.*

Mr. F. A. Nixon showed—

(*a*) Dry gangrene of finger caused by an incised wound in a patient, a young lady, aged fifteen years.

(*b*) Lacerated wound of heart caused by a runaway horse. Patient was brought into hospital. There were four ribs broken on the left side without laceration of lung or pleura. The pericardium was filled with blood, which came from a lacerated non-penetrating wound of the left ventricle.

The Section then adjourned.

ARCHIVES CLINIQUES DE BORDEAUX.

The Bordeaux *Faculty of Medicine* was founded in 1878, and a powerful impulse was thereby given to medical studies and medical science. A monthly journal devoted to clinical medicine has been established, and its first number (Jan., 1892) is before us. It is to be devoted exclusively to clinical medicine and the related sciences. It will contain only original matter—no reports of learned societies, no controversies, no discussions on the interests of the profession, and will not enter into competition with the periodicals occupied with such matters. It will publish clinical lectures, bearing upon rare or interesting cases, or upon the author's personal experiences, and original papers based upon clinical or anatomo-pathological observations. The number contains 48 octavo pages, and costs 1½ franc.

SANITARY AND METEOROLOGICAL NOTES.

Compiled by J. W. Moore, B.A., M.D., Univ. Dubl.; F.R.C.P.I.; F. R. Met. Soc.; Diplomate in State Medicine and ex-Sch. Trin. Coll. Dubl.

Vital Statistics

For four Weeks ending Saturday, August 13, 1892.

The deaths registered in each of the four weeks in the sixteen principal Town Districts of Ireland, alphabetically arranged, corresponded to the following annual rates per 1,000:—

Towns	Weeks ending				Towns	Weeks ending			
	July 23.	July 30.	August 6.	August 13.		July 23.	July 30.	August 6.	August 13.
Armagh -	14·0	7·0	0·0	7·0	Limerick -	21·1	11·2	18·2	18·2
Belfast -	26·9	21·8	21·8	28·5	Lisburn -	12·8	25·5	12·8	4·3
Cork -	24·2	24·9	12·5	24·9	Londonderry	23·6	4·7	6·3	18·8
Drogheda	17·6	26·4	13·2	22·0	Lurgan -	27·4	22·8	36·5	13·7
Dublin -	19·4	27·7	20·3	21·5	Newry -	28·2	24·1	20·1	16·1
Dundalk -	4·2	50·3	20·9	16·8	Sligo -	20·6	10·2	10·2	20·3
Galway -	18·9	34·0	15·1	15·1	Waterford -	17·5	27·5	17·5	20·0
Kilkenny	18·9	4·7	14·2	28·3	Wexford -	4·5	13·5	13·5	27·1

In the week ending Saturday, July 23, 1892, the mortality in thirty-three large English towns, including London (in which the rate was 19·0), was equal to an average annual death-rate of 17·7 per 1,000 persons living. The average rate for eight principal towns of Scotland was 18·4 per 1,000. In Glasgow the rate was 18·9, and in Edinburgh it was 20·0.

The average annual death-rate represented by the deaths registered during the week in the sixteen principal town districts of Ireland was 21·8 per 1,000 of the population, according to the Census of 1891.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 3·0 per 1,000, the rates varying from 0·0 in Waterford, Galway, Dundalk, Drogheda, Wexford, and Armagh, to 12·1 in Newry—the 7 deaths from all causes registered in the last-named district comprising 1 from measles, 1 from scarlatina, and 1 from whooping-cough. Among the 132 deaths from all causes registered in Belfast are 13 from measles (being equal to the number for the preceding week), 2 from scarlatina, 3 from whooping-cough, 2 from diphtheria, and 6 from diarrhœa. The 35 deaths in Cork comprise 2 from measles and 1 from enteric fever.

In the Dublin Registration District the registered births amounted to 183—96 boys and 87 girls; and the registered deaths to 133—66 males and 67 females.

The deaths, which are 16 under the average number for the corresponding week of the last ten years, represent an annual rate of mortality of 19·8 in every 1,000 of the population. Omitting the deaths (numbering 3) of persons admitted into public institutions from localities outside the district, the rate was 19·4 per 1,000. During the first twenty-nine weeks of the current year the death-rate averaged 33·5, and was 4·7 over the mean rate in the corresponding period of the ten years 1882–1891.

Twenty-two deaths from zymotic diseases were registered, being 3 over the number for the week ended July 16, and 1 above the average for the 29th week of the last ten years. They comprise 7 from measles (showing a decline of 2 as compared with the number from that cause in the preceding week), 2 from whooping-cough, and 4 from diarrhœa.

Only 10 cases of measles were admitted to hospital, being 10 below the admissions for the preceding week, and the lowest number for any week since that ended the 27th of February last. Fifteen measles patients were discharged, and 48 remained under treatment on Saturday, being 5 under the number in hospital at the close of the preceding week.

The number of cases of enteric fever admitted to hospital was 6, being 1 under the number for the preceding week. Five patients were discharged, 1 died, and 36 remained under treatment on Saturday, being equal to the number in hospital on Saturday, July 16.

The hospital admissions for the week include, also, 2 cases of scarlatina, but no cases of typhus were received: 14 cases of scarlatina and 2 of typhus remained under treatment in hospital on Saturday.

The number of deaths from diseases of the respiratory system is 20, being equal to the average for the 29th week of the last ten years, but 7 under the number for the week ended July 16. The 20 deaths comprise 7 from bronchitis and 12 from pneumonia or inflammation of the lungs.

In the week ending Saturday, July 30, the mortality in thirty-three large English towns, including London (in which the rate was 17·5), was equal to an average annual death-rate of 17·3 per 1,000 persons living. The average rate for eight principal towns of Scotland was 17·5 per 1,000. In Glasgow the rate was 19·4, and in Edinburgh it was 16·3.

The average annual death-rate in the sixteen principal town districts

of Ireland was 23·6 per 1,000 of the population according to the Census of 1891.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 2·2 per 1,000, the rates varying from 0·0 in eight of the districts to 8·0 in Newry—the 6 deaths from all causes registered in that district comprising 2 from whooping-cough. Among the 107 deaths from all causes registered in Belfast are 4 from measles (being a decrease of 9 as compared with the number for the preceding week), 1 from scarlatina, 1 from whooping-cough, 1 from diphtheria, 2 from enteric fever, and 7 from diarrhœa. The 36 deaths in Cork comprise 1 from measles and 1 from enteric fever.

In the Dublin Registration District the registered births amounted to 191—94 boys and 97 girls; and the registered deaths to 190—94 males and 96 females.

The deaths, which are 45 over the average number for the corresponding week of the last ten years, represent an annual rate of mortality of 28·3 in every 1,000 of the population. Omitting the deaths (numbering 4) of persons admitted into public institutions from localities outside the district, the rate was 27·7 per 1,000. During the first thirty weeks of the current year the death-rate averaged 33·4, and was 4·8 over the mean rate in the corresponding period of the ten years 1882–1891.

The number of deaths from zymotic diseases registered is 17, being 5 under the number for the week ended July 23, and 2 below the average for the 30th week of the last ten years. The 17 deaths comprise 8 from measles (showing an increase of 1 as compared with the number from that cause in the preceding week), 1 from whooping-cough, 1 from simple continued fever, and 3 from diarrhœa.

Twenty-four cases of measles were admitted to hospital, being 14 over the admissions for the preceding week. Sixteen measles patients were discharged and 56 remained under treatment on Saturday, being 8 over the number in hospital at the close of the preceding week.

Seven cases of enteric fever were admitted to hospital, against 6 admissions for the preceding week. Three patients were discharged and 40 remained under treatment on Saturday, being 4 above the number in hospital on Saturday, July 23.

The hospital admissions for the week include, also, 1 case of small-pox, 3 cases of scarlatina, and 1 case of typhus: 1 case of small-pox, 16 cases of scarlatina, and 2 of typhus remained under treatment in hospital on Saturday.

The number of deaths from diseases of the respiratory system is 29, being 12 over the average for the corresponding week of the last ten years, and 9 over the number for the week ended July 23rd. The 29 deaths comprise 18 from bronchitis, 4 from pneumonia or inflammation of the lungs, and 1 from pleurisy.

In the week ending Saturday, August 6, the mortality in thirty-three large English towns, including London (in which the rate was 17·2), was equal to an average annual death-rate of 17·4 per 1,000 persons living. The average rate for eight principal towns of Scotland was 18·5 per 1,000. In Glasgow the rate was 19·9, and in Edinburgh it was 16·3.

The average annual death-rate represented by the deaths registered in the sixteen principal town districts of Ireland was 18·9 per 1,000 of the population based on the Census of 1891.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 2·0 per 1,000, the rates varying from 0·0 in eight of the districts to 14·2 in Kilkenny—the 3 deaths from all causes registered in that district consisting of 1 from typhus and 2 from diarrhœa. Among the 107 deaths from all causes registered in Belfast are 2 from measles (being a decrease of 2 as compared with the number for the preceding week), 2 from whooping-cough, 1 from simple continued fever, 2 from enteric fever, and 5 from diarrhœa. The 3 deaths in Lisburn comprise 1 from measles and 1 from enteric fever.

In the Dublin Registration District the registered births amounted to 205—114 boys and 91 girls; and the registered deaths to 144—80 males and 64 females.

The deaths, which are 5 over the average number for the corresponding week of the last ten years, represent an annual rate of mortality of 21·5 in every 1,000 of the population. Omitting the deaths (numbering 8) of persons admitted into public institutions from localities outside the district, the rate was 20·3 per 1,000. During the first thirty-one weeks of the current year the death-rate averaged 33·0, and was 4·7 over the mean rate in the corresponding period of the ten years 1882-1891.

Eighteen deaths from zymotic diseases were registered, being 1 over the average for the week ended July 30th, but 3 below the average for the 31st week of the last 10 years. They comprise 6 from measles (showing a decrease of 2 as compared with the number from that cause in the preceding week), 2 from whooping-cough, and 5 from diarrhœa.

The number of cases of measles admitted to hospital was 22, being 2 below the admissions for the preceding week: 23 measles patients were discharged, and 55 remained under treatment on Saturday, being 1 under the number in hospital at the close of the preceding week.

Nine cases of enteric fever were admitted to hospital, against 7 admissions for the preceding week. Nine patients were discharged, 1 died, and 37 remained under treatment on Saturday, being 1 under the number in hospital on Saturday, July 30.

The hospital admissions for the week include, also, 2 cases of scarlatina: 12 cases of this disease remained under treatment in hospital on Saturday.

The number of deaths from diseases of the respiratory system was 17, being 1 over the average for the corresponding week of the last ten years, but 12 below the number for the week ended July 30. The 17 deaths consist of 11 from bronchitis and 6 from pneumonia or inflammation of the lungs.

In the week ending Saturday, August 13, the mortality in thirty-three large English towns, including London (in which the rate was 17·4), was equal to an average annual death-rate of 18·0 per 1,000 persons living. The average rate for eight principal towns of Scotland was 17·0 per 1,000. In Glasgow the rate was 18·7, and in Edinburgh it was 14·9.

The average annual death-rate in the sixteen principal town districts of Ireland was 23·0 per 1,000 of the population according to the Census of 1891.

The deaths from the principal zymotic diseases registered in the sixteen districts were equal to an annual rate of 2·1 per 1,000, the rates varying from 0·0 in nine of the districts to 8·4 in Dundalk—the 4 deaths from all causes registered in that district comprising 2 from simple continued fever. Among the 140 deaths from all causes registered in Belfast are 2 from measles, 1 from whooping-cough, 1 from diphtheria, 1 from simple continued fever, 1 from enteric fever, and 10 from diarrhœa. The 36 deaths in Cork comprise 2 from measles.

In the Dublin Registration District the registered births amounted to 201—112 boys and 89 girls; and the registered deaths to 145—69 males and 76 females.

The deaths, which are 9 over the average number for the corresponding week of the last ten years, represent an annual rate of mortality of 21·6 in every 1,000 of the population. Omitting the death of one person admitted to hospital from without the district, the rate was 21·5 per 1,000. During the first thirty-two weeks of the current year the death-rate averaged 32·6, and was 4·4 over the mean rate in the corresponding period of the ten years 1882–1891.

The number of deaths from zymotic diseases registered is 18, being equal to the number for the preceding week, but 6 below the average for the 32nd week of the last ten years. The 18 deaths comprise 5 from measles (showing a decrease of 1 as compared with the number from that cause in the preceding week), 2 from whooping-cough, 6 from diarrhœa, and 1 from erysipelas.

The number of cases of measles admitted to hospital was 20, being 2 under the admissions for the preceding week: 10 measles patients were discharged, and 65 remained under treatment on Saturday, being 10 over the number in hospital at the close of the preceding week.

Only 5 cases of enteric fever were admitted to hospital, being 4 under the admissions for the preceding week, and 2 under the number for the week ended July 30. Three patients were discharged, and 41 remained under treatment on Saturday, being 2 over the number in hospital at the close of the preceding week.

The hospital admissions for the week include, also, 7 cases of scarlatina (against 2 for the preceding week): 15 cases of this disease remained under treatment in hospital on Saturday.

Only 9 deaths from diseases of the respiratory system were registered, beirg 11 below the average for the corresponding week of the last ten years, and 8 under the number for the week ended August 6. They comprise 3 from bronchitis, and 3 from pneumonia or inflammation of the lungs.

VITAL STATISTICS

For four Weeks ending Saturday, September 10, 1892

The deaths registered in each of the four weeks in the sixteen principal Town Districts of Ireland, alphabetically arranged, corresponded to the following annual rates per 1,000:—

Towns	Weeks ending				Towns	Weeks ending			
	Aug. 20	Aug. 27	Sept. 3	Sept. 10		Aug. 20	Aug. 27	Sept. 3	Sept. 10
Armagh -	21·0	28·0	14·0	21·0	Limerick -	14·0	9·8	8·4	14·0
Belfast -	17·7	22·0	24·9	25·3	Lisburn -	4·3	17·0	12·8	8·5
Cork -	15·9	24·2	18·0	14·5	Londonderry	25·1	4·7	14·1	20·4
Drogheda	22·0	17·6	17·0	8·8	Lurgan -	13·7	9·1	36·5	13·7
Dublin -	18·5	23·4	25·5	27·4	Newry -	12·1	16·1	8·1	28·2
Dundalk -	8·4	16·8	8·4	0·0	Sligo -	10·2	30·5	10·2	0·0
Galway -	30·2	34·0	22·7	18·9	Waterford -	22·5	20·0	22·5	20·0
Kilkenny	18·9	23·6	33·0	4·7	Wexford -	4·5	13·5	36·1	13·5

In the week ending Saturday, August 20, 1892, the mortality in thirty-three large English towns, including London (in which the rate was 17·2), was equal to an average annual death-rate of 18·0 per 1,000 persons living. The average rate for eight principal towns of Scotland was 17·2 per 1,000. In Glasgow the rate was 18·3, and in Edinburgh it was 16·7.

The average annual death-rate represented by the deaths registered during the week in the sixteen principal town districts of Ireland was 17·7 per 1,000 of the population, according to the Census of 1891.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 3·0 per 1,000, the rates varying from 0·0 in ten of the districts to 5·7 in Belfast—the 87 deaths from all causes registered in that district comprising 5 from measles (being an increase of 3 as compared with the number for the preceding week), 1 from scarlatina, 2 from whooping-cough, 3 from enteric fever, and 17 from diarrhœa.

In the Dublin Registration District the registered births amounted to 203—107 boys and 96 girls; and the registered deaths to 131—76 males and 55 females.

The deaths, which are 29 under the average number for the corresponding week of the last ten years, represent an annual rate of mortality of 19·5 in every 1,000 of the population. Omitting the deaths (numbering 7) of persons admitted to public institutions from localities outside the district, the rate was 18·5 per 1,000. During the first thirty-three weeks of the current year the death-rate averaged 32·2, and was 4·2 over the mean rate in the corresponding period of the ten years 1882–1891.

Twenty-two deaths from zymotic diseases were registered, being 4 over the number for the week ended August 13, but 6 below the average for the 33rd week of the last ten years. They comprise 3 from measles (showing a decrease of 2 as compared with the number of deaths from that cause in the preceding week), 1 from scarlatina, 1 from whooping-cough, 1 from diphtheria, 2 from enteric fever, and 12 (including 11 deaths of children under 5 years old) from diarrhœa.

The number of cases of measles admitted to hospital was 14, being 6 under the admissions for the preceding week: 21 measles patients were discharged and 58 remained under treatment on Saturday, being 7 under the number in hospital at the close of the preceding week.

Ten cases of enteric fever were admitted to hospital against 5 admissions for the preceding week. Eight patients were discharged, 2 died, and 41 remained under treatment on Saturday, being equal to the number in hospital at the close of the preceding week.

The hospital admissions for the week include, also, 4 cases of scarlatina, but no cases of typhus were received: 17 cases of the former, and 2 of the latter disease remained under treatment in hospital on Saturday.

Only 8 deaths from diseases of the respiratory system were registered, being 9 below the average for the corresponding week of the last ten years, and 1 under the number for the week ended August 13. They comprise 3 from bronchitis and 2 from pneumonia or inflammation of the lungs.

In the week ending Saturday, August 27, the mortality in thirty-three large English towns, including London (in which the rate was 17·2), was equal to an average annual death-rate of 18·5 per 1,000 persons living.

The average rate for eight principal towns of Scotland was 16·2 per 1,000. In Glasgow the rate was 16·5, and in Edinburgh it was 17·5.

The average annual death-rate in the sixteen principal town districts of Ireland was 21·3 per 1,000 of the population, according to the Census of 1891.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 2·5 per 1,000, the rates varying from 0·0 in nine of the districts to 4·7 in Belfast—the 108 deaths from all causes registered in that district comprising 1 from scarlatina, 2 from whooping-cough, 1 from simple continued fever, and 19 from diarrhœa. Among the 35 deaths registered in Cork are 2 from typhus and 1 from whooping-cough. The 7 deaths in Limerick comprise 2 from diarrhœa.

In the Dublin Registration District the registered births amounted to 179—88 boys and 91 girls; and the registered deaths to 161—80 males and 81 females.

The deaths, which are 5 over the average number for the corresponding week of the last ten years, represent an annual rate of mortality of 24·0 in every 1,000 of the population. Omitting the deaths (numbering 4) of persons admitted to public institutions from localities outside the district, the rate was 23·4 per 1,000. During the first thirty-four weeks of the current year the death-rate averaged 32·0, and was 4·1 over the mean rate in the corresponding period of the ten years 1882–1891.

Twenty-three deaths from zymotic diseases were registered, being 1 over the number for the week ended August 20, but 3 below the average for the 34th week of the last ten years. They comprise 2 from measles, 1 from typhus, 1 from enteric fever, and 9 (including 7 deaths of children under 5 years old) from diarrhœa.

The number of cases of measles admitted to hospital was 9, being 5 under the admissions for the preceding week: 10 measles patients were discharged, 2 died, and 55 remained under treatment on Saturday, being 3 under the number in hospital at the close of the preceding week.

Twenty cases of enteric fever were admitted to hospital against 10 admissions for the preceding week. Eight patients were discharged and 53 remained under treatment on Saturday, being 12 over the number in hospital at the close of the preceding week.

The hospital admissions for the week include, also, 2 cases of scarlatina, but no cases of typhus were received: 16 cases of the former and 1 case of the latter disease remained under treatment in hospital on Saturday.

The number of deaths from diseases of the respiratory system was 19, being equal to the average for the corresponding week of the last ten years, and 11 over the low number for the week ended August 20. They comprise 9 from bronchitis, 5 from pneumonia or inflammation of the lungs, and 1 from croup.

In the week ending Saturday, September 3, the mortality in thirty-three large English towns, including London (in which the rate was 16·6), was equal to an average annual death-rate of 19·8 per 1,000 persons living. The average rate for eight principal towns of Scotland was 15·7 per 1,000. In Glasgow the rate was 17·0, and in Edinburgh it was 14·3.

The average annual death-rate represented by the deaths registered in the sixteen principal town districts of Ireland was 22·7 per 1,000 of the population based on the Census of 1891.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 4·3 per 1,000, the rates varying from 0·0 in nine of the districts to 12·5 in Waterford—the 9 deaths from all causes registered in that district comprising 5 from diarrhœa. Among the 122 deaths from all causes registered in Belfast are 1 from measles, 2 from whooping-cough, 2 from diphtheria, 5 from enteric fever, and 27 from diarrhœa. The 26 deaths in Cork comprise 1 from enteric fever and 2 from diarrhœa.

In the Dublin Registration District the registered births amounted to 184—91 boys and 93 girls; and the registered deaths to 176—95 males and 81 females.

The deaths, which are 3 over the average number for the corresponding week of the last ten years, represent an annual rate of mortality of 26·3 in every 1,000 of the population. Omitting the deaths (numbering 5) of persons admitted to public institutions from localities outside the district, the rate was 25·5 per 1,000. During the first thirty-five weeks of the current year the death-rate averaged 31·8, and was 4·0 over the mean rate in the corresponding period of the ten years 1882–1891.

The number of deaths from zymotic diseases registered is 36, being equal to the average for the corresponding week of the last ten years, and 13 over the number for the week ended August 27. The 36 deaths comprise 1 from measles, 2 from scarlatina, 2 from diphtheria, 2 from enteric fever, 19 (including 17 deaths of children under 5 years of age) from diarrhœa, and 1 from erysipelas.

Only 2 cases of measles were admitted to hospital, being 7 under the admissions for the preceding week: 23 measles patients were discharged, 1 died, and 33 remained under treatment on Saturday, being 22 under the number in hospital at the close of the preceding week.

The number of cases of enteric fever admitted to hospital was 19, being 1 under the admissions for the preceding week: 7 patients were discharged, and 65 remained under treatment on Saturday, being 12 over the number in hospital on Saturday, August 27.

The hospital admissions for the week include, also, 4 cases of scarlatina, but no cases of typhus were received: 16 cases of the former and 1 case of the latter disease remained under treatment in hospital on Saturday.

The number of deaths from diseases of the respiratory system was 19, being equal to the number for the week ended August 27, but 2 below the average for the 35th week of the last ten years. The 19 deaths comprise 13 from bronchitis and 5 from pneumonia or inflammation of the lungs.

In the week ending Saturday, September 10, the mortality in thirty-three large English towns, including London (in which the rate was 16·6), was equal to an average annual death-rate of 18·9 per 1,000 persons living. The average rate for eight principal towns of Scotland was 16·6 per 1,000. In Glasgow the rate was 17·3, and in Edinburgh it was 16·1.

The average annual death-rate in the sixteen principal town districts of Ireland was 22·7 per 1,000 of the population according to the Census of 1891.

The deaths from the principal zymotic diseases registered in the sixteen districts were equal to an annual rate of 4·7 per 1,000, the rates varying from 0·0 in eight of the districts to 7·3 in Belfast—the 124 deaths from all causes registered in that district comprising 1 from measles, 2 from whooping-cough, 2 from diphtheria, 4 from enteric fever, and 27 from diarrhœa. Among the 13 deaths from all causes registered in Londonderry are 1 from measles and 2 from whooping-cough. The 8 deaths in Waterford comprise 1 from enteric fever and 1 from diarrhœa.

In the Dublin Registration District the registered births amounted to 163—93 boys and 70 girls; and the registered deaths to 190—104 males and 86 females.

The deaths, which are 26 over the average number for the corresponding week of the last ten years, represent an annual rate of mortality of 28·3 in every 1,000 of the population. Omitting the deaths (numbering 6) of persons admitted to public institutions from localities outside the district, the rate was 27·4 per 1,000. During the first thirty-six weeks of the current year the death-rate averaged 31·7, and was 4·0 over the mean rate in the corresponding period of the ten years 1882–1891.

The number of deaths from zymotic diseases registered is 47, being 14 above the average for the corresponding week of the last ten years, and 11 over the number for the week ended September 3. The 47 deaths comprise 3 from measles, 1 from influenza, 1 from whooping-cough, 4 from enteric fever, and 28 (including 26 deaths of children under 5 years of age) from diarrhœa.

Two cases of measles had been admitted to hospital during the preceding week, but no cases were received this week: 10 measles patients were discharged, 2 died, and 21 remained under treatment on Saturday, being 12 under the number in hospital at the close of the preceding week.

The number of cases of enteric fever admitted to hospital is 17, being 2 below the admissions for the preceding week. Five patients were discharged, 2 died, and 75 remained under treatment on Saturday, being 10 over the number in hospital on Saturday, September 3.

The hospital admissions for the week include, also, 2 cases of scarlatina, but no cases of typhus were received: 13 cases of the former and 1 case of the latter disease remained under treatment in hospital on Saturday.

The number of deaths from diseases of the respiratory system is 17, being 2 under the number for the previous week, and 1 under the average for the 36th week of the last ten years. The 17 deaths consist of 8 from bronchitis, 8 from pneumonia or inflammation of the lungs, and 1 from croup.

METEOROLOGY.

Abstract of Observations made in the City of Dublin, Lat. 53° 20′ *N. Long.* 6° 15′ *W., for the Month of August,* 1892.

Mean Height of Barometer,	29·852 inches.
Maximal Height of Barometer (on 10th, at 9 a.m.),	30·230 „
Minimal Height of Barometer (on 30th, at noon)	29·140 „
Mean Dry-bulb Temperature,	59·0°.
Mean Wet-bulb Temperature,	56·2°.
Mean Dew-point Temperature,	53·6°.
Mean Elastic Force (Tension) of Aqueous Vapour,	·412 inch.
Mean Humidity,	82·8 per cent.
Highest Temperature in Shade (on 11th and 13th)	70·0°.
Lowest Temperature in Shade (on 10th),	43·0°.
Lowest Temperature on Grass (Radiation) (on 10th),	40·9°.
Mean Amount of Cloud,	64·9 per cent.
Rainfall (on 22 days),	3·557 inches.
Greatest Daily Rainfall (on 16th),	1·310 inches.
General Directions of Wind,	W., S.W., N.W.

Remarks.

Although changeable and forming no exception to the rule that August is characterised by heavy rains, this month was much less unfavourable than it had proved in each of the three preceding years. While no excessively high thermometer readings were noted in Ireland, the mean temperature was fully up to the average—in Dublin it was slightly in excess. The rains also, if heavy, were never continuous, and fine, bright intervals were often enjoyed. From a medical point of view it was a healthy month, diarrhœal diseases being held in check by the fresh high winds and abundant rainfall.

In Dublin the arithmetical mean temperature (60·0°) was slightly above the average (59·7°); the mean dry bulb readings at 9 a.m. and 9 p.m. were 59·0°. In the twenty-seven years ending with 1891, August was coldest in 1881 (M.T. = 57·0°), and warmest in 1871 (M. T. = 62·0°). In 1885, the M. T. was only 57·1°; in 1879 (the "cold year"), it was 57·7°; in 1887 it was 60·3°; in 1888 it was 58·2°; in 1889, 58·6°; in 1890, only 57·2°, and in 1891, 58·1°.

The mean height of the barometer was 29·852 inches, or 0·045 inch below the corrected average value for August—namely, 29·897 inches. The mercury marked 30·230 inches at 9 a.m. of the 10th, and fell to 29·140 inches at noon of the 30th. The observed range of atmospherical pressure was, therefore, 1·090 inches—that is, a little less than an inch and one-tenth.

The mean temperature deduced from daily readings of the dry bulb thermometer at 9 a.m. and 9 p.m. was 59·0°, or 1·4° above the value in August, 1888 and 1889, 2·7° above the value in August, 1890, and 1·8° above it in 1891. It was also 1·8° above the value for July, 1892. Using the formula, *Mean Temp.* = *Min.* + (*max.*—*min.* × ·47), the value was 59·6°, or 0·3° above the average mean temperature for August, calculated in the same way, in the twenty-five years, 1865–89, inclusive (59·3°). The arithmetical mean of the maximal and minimal readings was 60·0°, compared with a twenty-five years' average of 59·7°. On the 11th and 13th, the thermometer in the screen rose to 70·0°—wind, W.S.W. on both occasions; on the 10th the temperature fell to 43·0°—wind, calm. The minimum on the grass was 40·9° on the same date.

The rainfall was 3·557 inches, distributed over as many as 22 days. The average rainfall for August in the twenty-five years, 1865–89, inclusive, was 2·825 inches, and the average number of rainy days was 15·5. The rainfall, therefore, and the rainy days were considerably in excess of the average. In 1874 the rainfall in August was very large—4·946 inches on 18 days; and in 1868 also 4·745 inches fell on, however, only 13 days; but the heaviest downpour in August occurred in 1889, when 5·747 inches were registered on 22 days. On the other hand, in 1884, only ·777 inch was measured on 8 days. In 1887, 1·520 inches of rain fell on 16 days, in 1888, 1·270 inches on 12 days, in 1890, 2·799 inches on 19 days, and in 1891, 4·953 inches on 25 days.

High winds were noted on as many as 12 days, and attained the force of a gale on two occasions—namely, the 1st and 14th. A thunderstorm occurred on the 18th. Thunder was heard on the 13th. Lightning was seen on the 22nd and 23rd. Temperature reached 70° in the screen on two days. Solar halos were seen on the 10th, 17th, and 19th. It was foggy on the 22nd. A shock of earthquake was felt in the Counties of Dublin, Kildare, Wicklow, and Wexford, in the early morning of the 18th.

The record of the weather of the period ended Saturday, the 6th, is distinctly favourable. There was an advance in temperature, and the amount of bright sunshine was again considerable. Until Friday, the

5th, an anticyclone extended over Ireland from the Atlantic, while depressions of no great depth passed in succession southeastwards across Scandinavia and the North Sea. Hence northwesterly winds prevailed, sometimes blowing very freshly, and clouds and showers were reported from exposed stations from time to time. On Friday a broad band of high pressure stretched eastward across France and the South of England, while a depression of some intensity crossed the North of Scotland in an easterly direction. Under the influence of this system, the wind backed temporarily to S.W. in Ireland, and heavy showers fell in places. On Saturday, the weather was again fine and dry, with fresh W. and W.N.W. winds. In Dublin the barometer ranged between 30·227 inches at 9 p.m. of Monday (wind N.N.W.) and 29·894 inches at 9 p.m. of Friday (wind W.S.W.). The screened thermometers rose to 67·9° on Wednesday and fell to 53·0 on Thursday, and to 53·1° on Saturday. Rainfall amounted to ·151 inch on four days, ·061 inch being measured on Saturday. The prevailing winds were N.W. and W.

During the week ended Saturday, the 13th, the weather was changeable, with some heavy falls of rain at the beginning and close, and a considerable range of temperature. As regards distribution of atmospherical pressure, it may be described as being of a mixed type—at first it was cyclonic, then it became anticyclonic, and finally it reverted to the cyclonic form. During Sunday and Monday a shallow depression was passing in an easterly direction across the British Islands. This system showed no steep baric gradients, and was remarkable rather for the heavy rains which attended its passage than for any high winds. In two days, 1·63 inches of rain fell at Valentia in Kerry; 2·00 inches at Holyhead; 1·38 inches at Parsonstown; and 1·34 inches at Donaghadee. When this system moved away eastwards, northerly winds set in, the sky cleared, and radiation became so great that night minima between 36° and 43° were reported from most parts of the British Islands. On Thursday an anticyclone, which had come in from the Atlantic on Tuesday, moved southeastwards to the Continent, and a new series of depressions appeared in the extreme North-West. These brought fresh S.W. winds and rain or showers on Friday and Saturday, but the broken weather was compensated for by pleasantly high temperatures. In Dublin the mean height of the barometer was 29·926 inches, pressure ranging between 30·230 inches at 9 a.m. of Wednesday (wind calm), and 29·509 inches at 5 p.m. of Saturday (wind S.W.). The corrected mean temperature was 58·8°. The mean dry bulb temperature at 9 a.m. and 9 p.m. was 58·9°. The screened thermometers rose to 70·0° on Thursday and Saturday, having fallen to 43·0° on Wednesday. The rainfall was ·859 inch on five days, ·680 inch being measured on Sunday. The most prevalent wind was S.W. Thunder was heard on Saturday afternoon, when thunderstorms with heavy rain prevailed in the County Wicklow. Brilliant aurora was seen in many parts of North-Western Europe on Friday night.

The week ended Saturday, the 20th, is remarkable for the prevalence of torrid heat on the Continent, the occurrence of an earthquake in the S.W. of England, the S. of Wales, and the S.E. of Ireland early on Thursday morning, and the prevalence of very heavy thunder-rains—at first in Ireland, afterwards in England and over France. On Sunday more than an inch of rain fell at Parsonstown and Donaghadee, and three-quarters of an inch at Roche's Point. A second rainstorm occurred on Tuesday, when 0·95 inch was measured at Roche's Point and 1·31 inches in Dublin. Wednesday was a fine day, but a solar halo appeared in theafternoon. At 12 3 a.m. of Thursday (by Irish time) an earthquake was felt in the Counties of Dublin, Kildare, Wicklow, and Wexford, as well as in South Wales, Devonshire, and Cornwall. Later in the day there was a heavy rainfall in Dublin, accompanied by thunder and lightning. Friday proved beautifully fine in Ireland, but severe thunderstorms were felt over the greater part of Southern England, the attendant rainfall exceeding an inch in many places—1·3 inches at Cambridge, 1·36 inches in Jersey. But the most remarkable feature of the period was the excessive heat on the Continent. On Tuesday, the thermometer rose to 108° at Biarritz. Next day the maximum at that station was 104°, while it was 98° at Lyons, 97° at Wiesbaden, 95° at Berlin, and 93° in Paris. On Thursday the thermometer touched 95° in Paris, 96° at Brussels, and 97° at Lyons. The highest reading in the British Islands during this heated period was 83° at Cambridge on Wednesday. In Dublin the mean height of the barometer was 29·813 inches, and pressure varied from 29·271 inches at 9 p.m. of Sunday (wind S.W.) to 29·987 inches at 9 a.m. of Tuesday (wind S.) The corrected mean temperature was 59·3°. The mean dry bulb temperature at 9 a.m. and 9 p.m. was 58·6°. The screened thermometers rose to 68·8° and also fell to 50·1° on Saturday. The rainfall measured 1·828 inches, of which 1·310 inches fell on Tuesday. The rainy days were five. The prevailing wind was S.W.

Although changeable, the weather of the week ended Saturday, the 27th, was by no means unfavourable in Dublin. Over the south and west of Ireland, however, extremely heavy rains fell between Sunday evening and Wednesday morning—at Roche's Point, Co. Cork, the measurement was no less than 4·35 inches, 2·75 inches falling in the 24 hours ending 8 a.m. of Wednesday. This downpour was, as usual, connected with the formation of shallow atmospherical depressions moving but slowly, with hot southerly winds to the eastward and cool northerly winds on their western side. One of these depressions formed over the South of England on Tuesday, causing severe thunderstorms but no excessive rains in that district. These disturbances followed upon a day of great heat, the shade thermometer having risen on Tuesday to 77° at Oxford, 78° at York, 80° in London, and 82° at Loughborough and Cambridge. On Friday and Saturday a general and very decided reduction of pressure took place in the North, so that fresh westerly winds were felt and heavy showers fell in places, Dublin again almost entirely escaping the bad weather. In Dublin the mean height of the barometer was 29·829 inches, pressure ranging from 30·036 inches at 9 p.m. of Sunday (wind, S.S.W.) to 29·568 inches at 5·45 p.m. of Saturday (wind, W.). The corrected mean temperature was 60·9°. The mean dry bulb temperature at 9 a.m. and 9 p.m. was 60·3°. The shade thermometers rose to 69·9° on Sunday and fell to 49·8° on Thursday. The rainfall was ·137 inch, on four days, ·061 inch being measured on Tuesday. The prevailing winds were at first S., afterwards W. Lightning was seen on the nights of Monday and Tuesday.

During the last four days of the month the weather remained in an unsettled, rainy condition, owing to the passage in a north-easterly direction of a deep depression across the British Islands. Large quantities of rain fell, and the winds were at times very high. In Dublin the barometer sank to 29·140 inches at noon of the 30th. This illustrates the statement made last year that deep cyclonic systems sweep almost periodically across North-Western Europe during the last week of August.

The rainfall in Dublin during the eight months ending August 31st has amounted to 17·279 inches on 131 days compared with 9·455 inches on 96 days during the same period in 1887, 17·264 inches on 121 days in 1888, 18·893 inches on 134 days in 1889, 18·386 inches on 137 days in 1890, 15·888 inches on 117 days in 1891, and a 25 years' average of 17·558 inches on 128·1 days.

At Knockdolian, Greystones, Co. Wicklow, the rainfall in August, 1892, was 4·588 inches, distributed over 18 days. Of this quantity ·710 inch fell on the 16th. The total fall since January 1 has been 21·296 inches on 108 days.

POPULATION OF NEW YORK.

According to the *N. Y. Medical Record*, experts differ considerably as to the population of the city of New York. The U. S. Census of 1890 puts it at 1,515,501. The City Board of Health estimated it at 1,631,232 on the 1st of July, 1890. The recent State Census says 1,800,891. Taking the Board of Health figures as a basis, the estimated population in April, 1892, would be about 1,700,000; but an estimate founded on the U.S. Census would give 1,400,000. The death-rate varies from 22 to 27 per 1,000 according to the population-basis selected. The *Record* considers that the Board of Health's estimate, making the population about 1,700,000, is the most trustworthy.

PERISCOPE.

THYROID EXTRACT AFTER THYROIDECTOMY.

In the first fasciculus of this year of the Original Memoirs of *Lo Sperimentale* will be found a paper by Dr. Schwarz, Assistant in the pathological laboratory of Bologna, giving results of his examination into Vassale's conclusions. This physiologist published in 1890 a series of experiments, from which he inferred that an extract of the thyroid gland of the dog or the calf, injected into the veins of dogs from which the thyroid had been removed, not only confered immunity from the ordinary effects of extirpation, but also counteracted these effects after they had been developed. If this were so we should have a therapeutical remedy for cachexia strumipriva and other consequences of loss of the thyroid gland. Dr. Schwarz undertook two series of experiments, injecting thyroid extract before and after the development of the results of thyroidectomy. His conclusion is that the intravenous injection of thyroid extract has no power to arrest or prevent the consequences of extirpation of the gland.

TYPHUS IN NEW YORK.

On the night of the 11th February last the sanitary authorities of New York were made aware of an outbreak of typhus fever in the city—the most serious that has occurred for many years. The history is thus summarised by the *Boston Medical and Surgical Journal*:—On January 30th the French steamer Massilia, of the Fabre line, arrived with 717 steerage passengers. Two hundred and fifty of these were Russian Hebrew immigrants who were aided by funds provided by Baron Hirsch, and they were first transported from Odessa to Constantinople, whence they hoped to be able to go to Palestine and settle. Being disappointed in this, through the action of the Turkish authorities, they came to Marseilles, where they embarked on the Massilia, together with a considerable number of other immigrants of various nationalities. The steamer on January 1st took on board more than two hundred Italians, and on January 12th she sailed from Gibraltar. During the voyage to New York, according to the passengers' account when they landed, they were insufficiently fed, and four died in mid-ocean. On the ship's arrival eleven passengers were still ill, three of them with what was believed to be typhoid fever, but which, as the sequel shows, was undoubtedly typhus. They were all sent to the immigrant station on Ellis Island, the Russian refugees unfortunately being permitted to land on the understanding that the United Hebrew Charities, which have charge of the disposition of the Baron Hirsch fund in New York, should not permit them to become a burden in this country! They were for the most part in a pitiable state of destitution, and some 400 dols. was expended in providing clothing for them. One of the houses to which they were sent was on Twelfth-street, near Third Avenue, and a number of its inmates were soon reported ill. A physician in the service of the United Hebrew Charities was called to attend them on the 8th, and on the 11th he reported to the Bureau of Contagious Diseases with a view to have some of the sick removed to hospital. The official inspector visited the infected premises, found 15 cases of typhus, and ascertained that the first case had occurred on the 2nd. Other tenements where Russian immigrants had been lodged supplied 43 cases, and about 60 Russian passengers by the Massilia had been sent up country, probably carrying typhus with them to disperse. When the paper was written 89 cases were under treatment in hospital. The Russian immigration into the United States under the impulse of Jew-baiting and political discontent is enormous and alarming. In the last six months of 1891 "the number of immigrants coming from Russia (Poland excepted) in those months was 46,710 as against 20,934 in the corresponding months of 1890. The whole number of immigrants was greater in 1891 than in 1890 by about 100,000, and nearly half of this increase is ascribed in the reports to Russia and Poland."

THE MEETING OF THE BRITISH MEDICAL ASSOCIATION AT NOTTINGHAM.

MESSRS. BURROUGHS, WELLCOME, & CO., of Snow Hill Buildings, London, have asked us to mention that they have made arrangements to send to any member of the medical profession upon request a photographic souvenir of the recent annual meeting of the British Medical Association, which, as our readers will remember, took place at Nottingham during the last week of July. We have received two of these souvenirs, and have no hesitation in pronouncing them to be excellent specimens of the photographic art.

NEW PREPARATIONS AND SCIENTIFIC INVENTIONS.

Tabloids of "Blaud's Pills," of Ergotin, of Resorcin, and of Ichthyol.

These are the most recent additions to Messrs. Burroughs & Wellcome's long list of compressed tabloids.

Each tabloid of "Blaud's Pills" is equivalent to four grains of Blaud's formula. Its ingredients are kept in perfect condition until the tabloid reaches the stomach, where it quickly decomposes and ferrous carbonate passes off the surface as formed. Upon wetting the surface of the tabloid the green ferrous carbonate at once becomes visible. Owing to their size and shape, these tabloids can be taken without difficulty even by fastidious patients who can make no attempt to swallow an ordinary pill. They are elegantly dispensed in an oval, well-stoppered bottle of dark-coloured glass.

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The compressed tabloids of resorcin are of the strength of 3 grains. They are readily soluble in water, and the solution may be used for topical application, subcutaneous injection, or internally in the form of a draught. The resorcin is guaranteed free from creasotic impurities. The drug is employed with advantage in lupus, epithelioma, and other forms of cancer; in chronic and impetiginous eczema, as well as in fermentative dyspepsia and consequent diarrhœa.

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Valdepeñas.

Under this name Messrs. A. Sordo Lopez and Son, importers of Spanish wines and produce, of George-street, Manchester-square, London, have introduced to the notice of the medical profession two novel wines, of their own shipment. These wines are prepared from grapes grown in an iron soil, and are stated to be absolutely pure. One of the wines is red, the other is white.

In the *Lancet* of May 14th, 1892, will be found the following analysis: "Red Valdepeñas" contains—alcohol 12·30 per cent. by weight (equal to 15·20 per cent. by volume); extract 2·6 per cent.; mineral matter 0·24 per cent. The white wine gave the following results:—Alcohol 10·95 per cent. (equal to 13·55 per cent. by volume); extract 1·43 per cent.; mineral matter 0·32 per cent.

We have tried both wines, and are free to confess that we prefer the "White Valdepeñas." It is very light, has a delicate bouquet and a remarkable flavour—at first it resembles hock, but the after-taste is that of a very dry sherry. It is a refreshing luncheon or dinner wine.

The "Red Valdepeñas" is of the Burgundy or Carlowitz type. Its taste is somewhat rough, but diluted with Seltzer water, it makes an excellent beverage.

Both these novel wines are very inexpensive.

THE DUBLIN JOURNAL

OF

MEDICAL SCIENCE.

CONTENTS.

THIRD SERIES, No. CCLI.—NOVEMBER 1, 1892.

PART I.—ORIGINAL COMMUNICATIONS.

PAGE

ART. XV.—Endothelioma of the Lesser Omentum. By CONOLLY NORMAN, F.R.C.P.I.; Medical Superintendent, Richmond (Dublin District) Asylum. (Illustrated), - - - - - - 369

ART. XVI.—Anæsthetics: a Clinical Study. By DUDLEY W. BUXTON, M.D., B.S. Lond; Administrator and Teacher of Anæsthetising in University College Hospital; Anæsthetist in the Hospital for Paralysis, Queen's-square, London, - - - - - 378

ART. XVII.—Detachment of Retina. By JOHN B. STORY, M.B., F.R.C.S.I.; Surgeon to St. Mark's Ophthalmic Hospital, - - 390

ART. XVIII.—Some of the Important Advances Made in Surgical Practice during Recent Years. By HENRY O'NEILL, M.D.; M.Ch.; President of the Ulster Medical Society, and Visiting Surgeon, Belfast Royal Hospital, - - - - - - 395

ART. XIX.—The High Death-rate in Irish Towns and its Causes. Revised and brought up to date. By JOHN STRAHAN, M.D., M.Ch., M.A.O., - - - - - - - - - 403

ART. XX.—Should Primary Syphilis and Tubercular Phthisis be added to the notifiable diseases specified in Section VI. of the Infectious Diseases (Notification) Act, 1889 (52 & 53 Vic., cap. 72)? By NINIAN M'INTIRE FALKINER, B.A., M.B. Univ. Dubl.; Diplomate in State Medicine, Trin. Coll. Dubl.; F.R.C.P.I., - - - 418

PAGE

PART II.—REVIEWS AND BIBLIOGRAPHICAL NOTICES.

1. A Treatise on Diseases of the Lungs and Pleura. By the late WILSON FOX, M.D., F.R.S., F.R.C.P.; Physician-in-Ordinary to her Majesty the Queen; Physician to his Royal Highness the Duke of Edinburgh; Holme Professor of Clinical Medicine at University College, London; Physician to University College Hospital. Edited by SIDNEY COUPLAND, M.D., F.R.C.P.; Physician to the Middlesex Hospital, - - - - - - - 422

2. Dictionary of Psychological Medicine. By D. HACK TUKE, M.D., LL.D., - - - - - - - - - 427

3. The "The A. B. C. Medical and Visiting List" for 1893, - - 428

4. The Disinfection of Scarlet Fever and other Infectious Diseases by Antiseptic Inunction. By J. B. CURGENVEN, M.R.C.S., L.S.A.; formerly House Surgeon to the Royal Free Hospital, &c. Read at a Meeting of the International Congress of Hygiene and Demography, London, 1891, - - - - - - - 428

5. Saint Thomas's Hospital Reports. New Series. Edited by DR. HADDEN and MR. ANDERSON. Vol. XX., - - - 429

6. Atlas of Clinical Medicine. By BYROM BRAMWELL, M.D., F.R.C.P. Edin., F.R.S. Edin.; Assistant Physician to the Edinburgh Royal Infirmary, &c. Vol. II., Part 1, - - - - - - 430

7. Practical Sanitation: a Handbook for Sanitary Inspectors and others interested in Sanitation. By GEORGE REID, M.D., D.P.H.; Fellow and Examiner of the Sanitary Institute of Great Britain; Medical Officer, Staffordshire County Council, &c. With an Appendix on Sanitary Law by HERBERT MANLEY, M.A., M.B., D.P.H.; Medical Officer of Health to the County Borough of West Bromwich. With numerous Diagrams, - - - 431

8. Reasons why the Office of Coroner should be held by a Member of the Medical Profession. By FREDERICK W. LOWNDES, M.R.C.S. Eng., - - - - - - - - - 431

9. Transactions of the Pathological Society of Manchester for the Session 1891–92. Edited by T. N. KELYNACK, M.B. Vol. I. - 433

10. An Introduction to Modern Therapeutics: being the Croonian Lectures on the Relationship between Chemical Structure and Physiological Action in relation to the Prevention, Control, and Cure of Disease. By T. LAUDER BRUNTON, M.D., D.Sc. Edin., F.R.C.P., F.R.S., &c.; Assistant Physician and Lecturer on Materia Medica and Therapeutics at St. Bartholomew's Hospital, - - 434

11. Alcohol and Public Health. By J. JAMES RIDGE, M.D., - - 435

PAGE

PART III.—SPECIAL REPORTS.

REPORT ON NERVOUS AND MENTAL DISEASE. By RINGROSE ATKINS, M.A., M.D.; Resident Medical Superintendent, District Lunatic Asylum, Waterford:—

I. Insanity in General, - - - - - - - 436
II. Neuro-Anatomy and Physiology, - - - - - 441

PART IV.—MEDICAL MISCELLANY.

ROYAL ACADEMY OF MEDICINE IN IRELAND:—

SECTION OF OBSTETRICS.

Appendages removed for Uterine Fibro-myoma. By DR. C. YELVERTON PEARSON, - - - - - - - 447
Double Monster. By DR. W. J. SMYLY, - - - - - 449
Hydatidiform Mole. By DR. C. YELVERTON PEARSON, - - 449
Case of Absence of Uterus; Double Ovarian Hernia. By DR. DAVID JACOB, - - - - - - - - 450
Dilatation of the Uterus and the Treatment of some of the Common Forms of Uterine Disease. By DR. ATTHILL, - - - - 451

SANITARY AND METEOROLOGICAL NOTES. Compiled by J. W. MOORE, B.A., M.D., Univ. Dubl.; F.R.C.P.I.; F.R. Met. Soc.; Diplomate in State Medicine and ex-Sch. of Trin. Coll. Dubl.:—

Vital Statistics for Four Weeks ending Saturday, October 8, 1892, 454
Meteorology—Abstract of Observations made at Dublin for Month of September, 1892, - - - - - - - 459

PERISCOPE:—

Case of Hyperpyrexia, - - - - - - - 421
Early Practitioners in Kentucky, - - - - - - 421
Mrs. Maybrick, - - - - - - - - 446
Compensation for Accidents, - - - - - - 453
The Plague of Cholera in Hamburg, - - - - - 463
Honours to an Irish Physician, - - - - - - 463
Sacral Hysterectomy, - - - - - - - 463
Tuberculin in Leprosy, - - - - - - - 464
Tuberculocidin, - - - - - - - - 464

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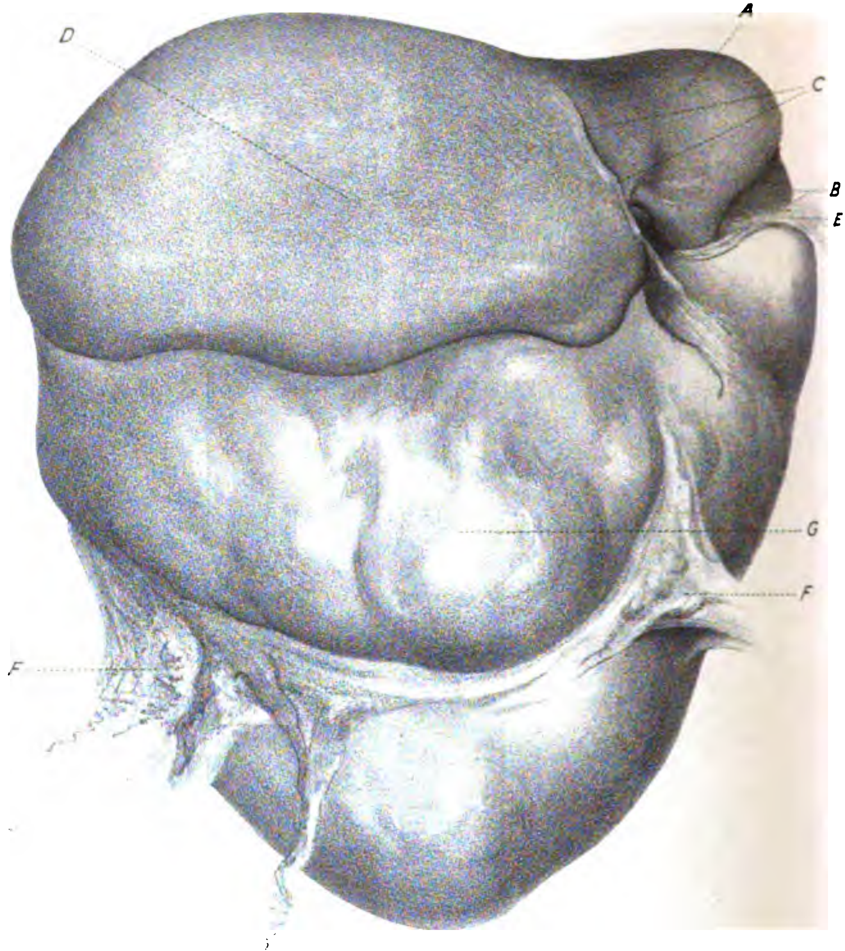

To illustrate M.r Conolly Norman's Paper.

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THE DUBLIN JOURNAL

OF

MEDICAL SCIENCE.

NOVEMBER 1, 1892.

PART I.

ORIGINAL COMMUNICATIONS.

◆

ART. XV.—*Endothelioma of the Lesser Omentum.*[a] By CONOLLY NORMAN, F.R.C.P.I.; Medical Superintendent, Richmond (Dublin District) Asylum.

THE following case is of some interest both from a clinical point of view and on account of the rarity of tumours of the position and structure here shown:—

CASE.—S. M., aged seventy-five, was admitted to the Richmond (Dublin District) Asylum, May 8, 1891. He was a tall, well-nourished man, heavily built, and very fat.

Nothing satisfactory could be made out with regard to his hereditary history.

He had been insane off and on for a great number of years, and had been under treatment in the Richmond Asylum for three months in 1852, for four months in 1854, for six months in 1856-57, and again for three months in 1860. Unfortunately no clinical records exist for those periods, though probably this is unimportant for our present purpose. Shortly after his discharge in 1860 he was committed to the Criminal Asylum, Dundrum, and remained there till he was transferred to the Richmond Asylum in May, 1891.

For his earlier mental symptoms one had to depend chiefly on his own account of himself. He used to entertain beliefs as to a mission or authority committed to him to overthrow the constitution of the country, and under their influence tried to damage public buildings and injure property marked with the crown. He stated that he had been sent to the Criminal Asylum after having been arrested for smashing the windows of a Government office.

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[a] Read before the Pathological Section of the Royal Academy of Medicine in Ireland, February 26, 1892.

When he came under my care he was a garrulous, weak-minded old man, little troubled by the shadows of his former delusions, not hypochondriacal or affected with visceral delusions.

The existence of a tumour in the abdomen escaped attention on his admission, perhaps owing to the fact that he was exceedingly fat. Early in June, 1891, he suffered from an attack of pain in the right hypochondrium, with constipation, vomiting, and raised temperature. It was then found that the hepatic dulness extended as low as the level of the umbilicus on the right side. Save in the epigastric region, dulness could scarcely be detected left of the middle line. The dull area was slightly prominent. The lower edge could be distinctly made out, corresponding to the margin of a mass which moved with the movements of the diaphragm, and which could not be distinguished by palpation from the liver. This mass produced the impression of being globular, presenting everywhere a rounded outline; it was very hard. The abdominal parietes did not at this time present any enlarged veins. The diagnosis was formed of cancerous infiltration of the liver chiefly affecting the right lobe. The extreme hardness of the tumour seemed to exclude the possibility of its being an hydatid, though the rounded outline and the absence of cachexia pointed in that direction.

The patient stated that he had been liable to similar attacks for the last twenty years, and he sorrowfully attributed them to hard drinking in early youth. He was ignorant of the existence of a tumour.

The symptoms passed off, but returned again at the end of the month, and on June 30 there were hæmatemesis and melæna.

The tumour slowly and steadily increased in size. It preserved its generally rounded contour. There was, on the whole, little pain. What there was varied in character, being sometimes sharp and colicky, at others dull and gnawing; but until the last six weeks of life he was often quite without pain for several days at a time. The temperature was usually about 99° and ran up to 100° when attacks of pain came on. Emaciation gradual, not extreme. From time to time attacks of hæmatemesis and melæna, usually contemporaneous; sometimes slight hæmatemesis without melæna or *vice versâ*. The bowels were generally free, and constipation was never a marked symptom. About one week before death he became slightly jaundiced; till then there had been no sign of jaundice. Neither was there any dropsy till a fortnight before death, when the feet and legs became slightly œdematous.

The tumour grew by extension downwards and towards the left. It could never be demarcated by a groove or depression, nor by the intervention of a clear percussion note, from the liver. It preserved to the touch a generally rounded surface and outline, but as the patient grew thinner slight unevennesses were to be detected here and there. While it remained very firm throughout, the sense of resistance to deep pressure became less towards the end, suggesting central softening.

The patient died 6th February, 1892. Autopsy 14 hours after death. Body slightly jaundiced; somewhat wasted, yet there was a thick layer of superficial abdominal fat. The belly was distended by a large tumour filling the entire right side of the abdomen down to the level of the mid hypogastric region, and in the umbilical region extending about three inches to the left of the navel.

The brain exhibited the usual indications of chronic wasting with thickened pia-arachnoid and slightly atheromatous arteries of the base. Lungs and heart healthy. Aorta somewhat atheromatous. Kidneys normal. Spleen normal. There was no indication of general peritonitis, and no effusion into the peritoneal cavity. A tumour was found occupying the position above indicated and displacing the intestines. It proved to be not the liver, but a growth lying inferiorly to that organ, of a shape which may be described as a broad-based, blunt-pointed cone. The liver was small, and of a uniform pale colour. It was very much pushed upwards, the most convex portion extending on the right to the level of the fourth rib. The liver was twisted on itself in such a way that very little of the left lobe appeared anteriorly. The inferior margin was very thin, and lay overlapping the tumour, which bulged below it, so as to leave no groove between the organ and the new growth. The left lobe of the liver was not adherent to the tumour in front. The right half of the overlapping portion of the right lobe adhered uniformly to the tumour, but the adhesions were very easily torn; the left half was attached here and there by a delicate band of adhesion. The surface of the liver retained its normal glister; the overlapping edge was somewhat rough, as if cirrhosed; elsewhere the surface was smooth. The gall-bladder did not appear beneath the edge of the liver, whereby this case differed from that of Frerichs to be presently described. On raising the overlapping portion of the liver in the position of the notch for the gall-bladder a smooth sac-wall could be distinguished embedded in the tumour at its most convex superior portion. This I took to be the anterior wall of the gall-bladder. Slitting it open longitudinally one found a cavity, the posterior wall of which was formed by softened tumour, here almost diffluent. Passing a probe upwards, to endeavour to trace the cystic duct, one came on a large, round gall-stone; no duct could be discovered.

The anterior surface of the tumour was adherent to the anterior abdominal wall by a few delicate bands. The colon from about the middle of the ascending to the middle of the transverse portion adhered to the lower and anterior surface of the tumour, but could be everywhere readily stripped off from it without injury. The great omentum appeared to be stretched over and entangled in the lower portion of the tumour; in parts it could, with care, be torn off. The stomach was not adherent to the tumour, was not distended, and did not exhibit any new growth. It contained a quantity of thick, ropy, blood-stained mucus. From the lesser curvature to the upper surface of the tumour, just beneath the left lobe of the liver, ran a short band, which appeared to be a portion of the lesser omentum remaining unaltered. The duodenum curved sharply behind the tumour, to which it did not directly adhere, but was connected throughout the greater part of its length by a short structure having the appearance of mesentery. A probe introduced into the common bile-duct ran upwards about three-quarters of an inch through a fold of peritoneal tissue, and was then occluded in the substance of the tumour close to its posterior margin. The portal vein was also lost in the new growth and occluded in the same position.

The pancreas was free, and its structure was normal.

When the liver and tumour were removed and the mass examined from behind and beneath, the left lobe of the liver was found to be free, and also the left half of the lobulus quadratus and the greater portion of the lobulus Spigelii. The tumour was inseparably adherent to the liver in the region of the transverse fissure and to the adjacent portions of the right lobe (lobulus quadratus, &c.).

The mass of tumour and liver together weighed 7 lbs. (112 ozs.). Of this I should say, from its size, the liver composed not much over 40 ozs.

The tumour was of a pinkish-grey colour, somewhat uneven and lumpy on the surface, without being distinctly nodular. In the fresh state it was easy to tear off from the surface shreddy patches of thin membranous tissue. On section the growth was found to be surrounded by a fibrous-looking capsule, of thickness varying from a line to little over one-eighth of an inch. From the internal surface of the capsule bands of a similar tissue ran inwards at a very acute angle. Some of these could be traced for a considerable distance into the interior of the tumour, uniting here and there with each other, and again splitting off at an acute angle. These bands were of a lighter colour than the rest of the growth, which was distinctly redder. The external portion of the tumour cut firmly; towards the centre it became more soft, but nowhere except around the back of the gall-bladder was it soft with the softness of encephaloid. Interiorly there were several hæmorrhages, and the centre was occupied by a large clot.

The liver on section was very pale. The bile-ducts were empty and were not dilated. In the middle of the overlapping portion of the right lobe, surrounded by liver tissue, was an irregular nodule of mottled, whitish discoloration; at its widest part of about the diameter of a sixpence. It was of equal firmness with the liver tissue. No other new growths were found throughout the liver or in any other viscera, though careful search was made. The mesenteric and retro-peritoneal glands were not enlarged. The intestines throughout showed here and there patches of intense injection, and the ileum contained a little blood.

Microscopic examination of the tumour showed a structure resembling that of an alveolar sarcoma. The fibrous capsule consisted of adult connective tissue with scattered fibres of yellow elastic tissue. The larger bands passing into the interior of the tumour contained similar constituents, and also many elongated connective tissue cells with rod-shaped nuclei. As the bands broke up further, to form the walls of the alveoli, they consisted only of the latter tissue. The larger bands contained vessels with well-formed walls. In the smaller the vessel-walls were formed by connective tissue cells identical with the surrounding tissue. The bands divided again and again into alveoli of various sizes—some simple, some compound—all tending towards a spindle or lozenge shape. The contents of the alveoli were cells containing little protoplasm, with large, granular, and bluntly-oval nuclei, staining deeply in carmine and logwood. In the smaller alveoli, and in the sub-divisions of the compound alveoli, the cells tended to arrange themselves in rows in the direction of the long axis of the alveolus. Towards the margin of the tumour the alveoli were of an elongated lozenge shape, and often contained at one or both extremities but one row of cells. Exceedingly delicate fibrils could be distinguished passing from the walls of the alveoli between the cells, and it appeared as if each cell was surrounded by such fibrils. The cells in contact with the walls of the alveoli exhibited a tendency to adhere to them even in teased specimens. The central portions of the tumour exhibited the same general structure as the outer portion, but the connective tissue was less in quantity, the alveoli were larger, and tended more to be circular in outline, and very densely packed with cells. Owing to these conditions it was difficult to obtain satisfactory sections of the interior parts of the tumour. There were numerous microscopic hæmorrhages in the outer parts; these became more frequent and larger within. Where the liver and tumour were intimately bound together in the neighbourhood of the transverse fissure, sections showing both structures exhibited to the naked eye a fairly marked line of demarcation. Microscopically this proved to be non-nucleated connective tissue. Septa ran off at an acute angle into the tumour, enclosing lozenge-shaped groups of cells, as at the margin of the tumour elsewhere. Quite a similar arrangement existed on the liver side of what we may call the capsule of the tumour. The latter structure was in some places very thin, and, as it were, encroached upon by the intercalation of elongated groups of tumour cells on one side and of liver cells on the other, so that these were but separated from each other by a very narrow band of connective tissue; but I found no place in this position where cells similar to those of the tumour occurred on what was distinctly the liver side of the capsule. The liver cells themselves were small and misshapen, no doubt owing to the pressure exerted by the abundant connective tissue.

The parts of the liver most remote from the tumour exhibited a slight degree of cirrhotic change of the "alcoholic" type. This was very well marked in the thin anterior portion that had been stretched over the tumour. The discoloured nodule observed by the naked eye contained clusters of tumour cells. These were situated in the thickened interlobular connective tissue, which here and there spread out to form a well-marked capsule for the oval or circular group of cells. The cells and their arrangement within their connective tissue capsule were identical with those observed in the tumour, the only difference noticeable being that the entire groups of cells tended to be more circular in shape than in the tumour. The clusters of cells were isolated from each other, not only by their proper capsules but generally also by lobules of liver tissue.

Manifestly, from its situation, this growth can only have originated from the gall-bladder or from the lesser omentum. A moment's thought will be sufficient to show that the notion of the former origin is untenable. The structure of the tumour appears to suggest that it is a product of the proliferation of the endothelial cells lining the lymphatics of the omentum. Probably its mode of growth was by the newly-formed cells insinuating themselves between the layers of the connective tissue and continually splitting it up into increasing numbers of loculi. Possibly the direction of increase was at once exogenous and endogenous, the outward growth of the cell masses being accompanied by constant formation of fresh connective tissue, which was again split up into alveoli; while the inward growth consisted merely or chiefly in the further intrusion of cells between the layers of the connective tissue—hence the lessened consistence of the central portions.

The clinical interest of the case centres in the extreme difficulty of diagnosis in such a condition. I know not how a case of this kind could be diagnosticated by physical signs during life from a malignant growth in the liver. The absence of ascites throughout and the almost complete absence of jaundice were remarkable. Why complete occlusion of the vena portæ and the gall-ducts did rot occur sooner it is not easy to understand.

It is interesting to note the slight tendency which seems to have existed to secondary deposit—one small depôt in the liver being alone discoverable.

Tumours of the lesser omentum must, I apprehend, be extremely rare. My opportunities for investigating the literature of the subject are not perhaps very complete, but I have only been able to find one case recorded which pretty closely resembles mine. It is briefly described and figured by Frerichs, "Diseases of the Liver," pp. 309, 310, vol. II. (New Sydenham Soc. Trans.). There are, says this author, cases "where cancerous tumours of the lesser omentum correspond closely to the form of the liver, and where it is impossible to distinguish between them and cancer of the liver" during life. Frerichs' illustration shows a small and compressed liver, stretched, as it were, over the superior surface of a tumour about twice its size, the latter being more distinctly nodular than in my case, and presenting what appear to be somewhat similar bands of peritoneal attachment. In this case the gall-bladder protruded beneath the liver and above the tumour, being much enlarged from (? early) occlusion of the cystic duct.

Primary malignant growths of the omental structures are most frequently found in the great omentum, but, even there, are of very unusual occurrence. Samuel West, describing a case of primary disseminated cancer of the omentum, calls attention to the rarity of primary cancer in this situation, and says that only two cases—described respectively by Gibbon and Longmore—are to be found in the Transactions of the Pathological Society (London). Here, however, he is wrong. He has overlooked two cases by Bristowe and one by Crisp.

Bristowe's first case is of some importance for our present purpose, as in it the lesser omentum only was involved. Unfortunately the description given is very brief. The patient was a female aged fifty. She presented deep jaundice and great emaciation. *Post mortem* the liver was found larger than normal, soft, of a uniform olive-green colour. The ducts were universally dilated, but not to an extreme degree, and they were filled with deep green limpid fluid. Gall-bladder of moderate size, and filled with the same kind of bile as that observed in the ducts. "The small omentum, from the liver to the pancreas, was infiltrated with dense white scirrhus." The vessels and ducts passed through the midst of this mass. The former were pervious, but the latter were narrowed and compressed, so as to be completely impervious. (Path. Soc. Trans., vol. IX. [1858], p. 225).

Septimus Gibbon (Path. Soc. Trans., vol. IX. [1858], p. 214) describes a case of primary cancer of the great omentum. No details are given as to microscopic appearances.

Longmore (Path. Soc. Trans., vol. XI. [1860], p. 98) relates a case of primary tumour of the great omentum, which he tells us presented the "usual appearances of scirrho-encephaloid cancer."

Bristowe's second case (Path. Soc. Trans, vol. XVII. [1866], p. 135) presented during life a tumour in the position usually occupied by growths in the great omentum. *Post mortem* this was found to consist of the great omentum contracted and thickened and infiltrated with colloid material. Outgrowths of colloid cancer occurred all over the peritoneal surface and in the pleuræ and parietal pericardium. The stomach was ulcerated by extension of the colloid infiltration. "The liver small, compressed by the adventitious growths which had formed around it; and its duct was compressed, and to a considerable extent obstructed by an accumulation of the same material in the substance of the lesser omentum."

Crisp (Path. Soc. Trans., vol. XXVI. [1875], p. 123) describes an instructive case under the name of cancer of the omentum. The patient was a man aged fifty-nine years. A tumour of the great omentum was distinguishable during life, and *post mortem* that structure was found to be drawn up into a hard, narrow, lobulated mass. "Behind the cæcum was a small, hard, cancerous mass of the same character." Beck and Arnott, who reported as reference committee on "Dr. Crisp's specimen of colloid cancer of the omentum," describe the tumour of the omentum as consisting of nodules more or less separate from each other, being covered with a dense fibrous membrane. Microscopically examined the growth was found "to be composed of a fibrous stroma arranged so as to form circular and oval alveoli. The alveoli in the more recent parts are filled with cells, irregular in shape and size, having one large clear nucleus. In the older parts the alveolar spaces are filled with a perfectly homogeneous colloid matter." The writers suggest an endothelial origin of the growth. "The cells have a tendency to adhere to the bands of fibrous tissue, suggesting that they might be the result of proliferation of the endothelium of the lymphatic spaces of the omentum. . . . We think it possible that the endothelium of the lymphatics may be the starting-point of the growth."

Eve (Path. Soc. Trans., vol. XXXVII. [1886], p. 496) describes a primary connective tissue tumour of the great omentum, for which myxoma or myxo-sarcoma would be, he considers, the best name. The growths presented an alveolar structure; "each alveolus filled with a homogeneous gelatinous material, in which, in some instances, beautiful figures of minutely-branched connective tissue cells and spindle-shaped nucleated cells prolonged into slender processes are clearly visible." True colloid cancer of the omentum, Eve remarks, is commonly seen as a secondary growth, "but there is, on anatomical grounds, reason to believe that, if growths from the endothelium are excepted, primary cancer of this structure does not occur."

West's case, above referred to, may be found in the forty-first volume of the Path. Soc. Trans. (1890). "A tumour of the great omentum could be clearly made out during life. This was found to be an irregular mass about 1½ inches thick, weighing 21 ounces. The peritoneal coat of the intestine was a good deal thickened, and in many parts at the commencement of the mesentery small, numerous, hard, whitish masses existed." There were no new growths elsewhere, so that these tumours must be considered primary. Eve and Sharkey, who examined both omental and mesenteric growths, briefly describe their structure as "scirrhous carcinoma."

The accompanying plate gives a fairly good notion of the naked eye appearance of the tumour in my case. At A the left lobe of the liver is shown drawn up somewhat so as to indicate that it is not attached to the new growth. B points to the under-surface of the posterior portion of the same lobe. C is the cut edge of the falciform ligament. D, right lobe of liver. E, peritoneal connection of tumour with stomach. F, attachment to large intestine. G points to the most convex anterior portion of tumour. The depression where the peritoneal connection existed with the colon is represented in the plate by much too deep a groove, and thereby the growth is given a more distinctly lobulated appearance than it really presented.

ART. XVI.—*Anæsthetics: a Clinical Study.*[a] By DUDLEY W. BUXTON, M.D., B.S. Lond.; Administrator and Teacher of Anæsthetising in University College Hospital; Anæsthetist in the Hospital for Paralysis, Queen's-square, London.

I CANNOT but feel greatly honoured and gratified that you have permitted me to address you upon this subject. My theme needs no apology, and whatever deficiencies you detect in the manner in which I may unfold its many sides to you will, I hope, be forgotten in the interest of the subject itself. Anæsthetics is, of course, a thing of old-world lore, but the knowledge of the systematic induction of anæsthesia by the formal use of chloroform, ether, nitrous oxide, and their congeners dates from less than half a century ago. What knowledge, therefore, we have upon this point is well within reach; consists, if I may be permitted to say so, of a large amount of undigested material dealing in the main with the physiology of anæsthesia as studied in the lower animals, and a certain number of records of deaths occurring during the use of one or another anæsthetic. To this catalogue we must add a good allowance of more or less acrimonious discussion between the partisans of one or another school of thought. In the early days of chloroform we met with pietists crying aloud in the wilderness of the lay press against the iniquity of giving parturient women chloroform, and so defeating the aims and mandates of a Providence which had ordained that in sorrow should woman bring forth children; and in these later days we find argument is tempered by personality, while the tedium of science is relieved by wrangling. A careful study of this literature justifies me, I think, in saying that up to the present time no systematic effort has been made to treat the study of anæsthetics as a clinical research, and employ the same acumen, the same rigid methods, and unimpassioned words in obtaining records as those we should insist upon were we about to grapple with, say, tachycardia, Raynaud's or Thomsen's disease; or the action of strophanthus or ulexine upon the organism. It is to urge the necessity for such a clinical study that I am here.

I admit readily enough, and I have no doubt I shall be reminded again and again in the course of the discussion, that many valuable, though brief, monographs dealing with the matter have from time to time appeared, but I submit, the general bearing of the profession with regard to anæsthetics has been one which cramped the study, lost its leading lines by running into side issues, and finally dwarfed the significance of the whole matter by accepting the *dicta* of great men, instead of seeking the *facta* of every-day experience. Most men pass through two stages at least—the book-knowledge stage, in which, chrysalis-like, they accept a store of food supplied without initial labour; and secondly, a butterfly stage, when they discard mere book-lore, and test all knowledge by what they see at their patients' bedsides. So is it with anæsthetics; many of us have believed that all that was to be known had by this time been set forth in books, so that no further appeal to the experience of the eye, the hand and the mind was deemed necessary. So assured are many persons of the soundness of their theories that, discarding the usual caution of scientists, they tell us that this *quæstio vexata* is now and for ever settled, and that further research is, besides being a weariness of the flesh, futile, if not impertinent. But such, surely, are not the ways of science. Let us say, *we believe* rather than *we know*; *we conclude* rather than *we have proved.*

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[a] Read before the Section of Obstetrics of the Royal Academy of Medicine in Ireland on Friday, January 8, 1892. [For discussion on this paper, see Vol. XCIII., p. 155.]

The necessity for the clinical investigation into the action of anæsthetics seems to be necessary for many reasons. In the first place, we have already had the benefit of many most careful researches conducted upon the lower animals, with results which are at present, to say the least of them, quite irreconcilable, but which have been conducted so carefully, and by such able experimenters, that we are bound to give them full credit for their work, and might well be "happy with either were the other but away." Thus, in 1855 the Commission appointed by the Society of Emulation in Paris came to the conclusion that in chloroform-poisoning the heart always survived the cessation of the respiration. This view was reversed by that taken by the Committee appointed by the Royal Medico-Chirurgical Society of London in 1864. The finding, again, of the Glasgow Committee of the British Medical Association was adverse to chloroform; it pointed out not only the liability of heart-failure, but laid stress upon the dangerous fall of blood-pressure, and the "capricious" behaviour of the heart under chloroform. The last Commission, that which did its work so well at Hyderabad, and with which all civilised nations must always couple, with gratitude, the name of that high-minded and philanthropic prince, the Nizam of Hyderabad, has taken a strong line of its own, and has declared that it never met with heart-failure under chloroform, either primary or otherwise, and it commits itself further to the statement that it does not believe heart-failure ever occurs. The arguments brought forward are too weighty to be passed over without careful consideration, but are too long for reproduction here.

The weak points in them appear to me to be that their experiments, and the deductions based upon them, fail wholly to explain the cases of Europeans with which we are constantly meeting, in whom heart-failure does occur. It is asking too much to expect us to refuse the evidence of our senses and our daily experience, because they run counter to the findings of a Commission whose work we all confess was well done, even if its conclusions were fallacious.

The results arrived at by Professor Wood, of Philadelphia, and by Professor MacWilliam, of Aberdeen, and of Professor Gaskell, of Cambridge, are so much out of accord with those referred to above, that we are compelled to admit that the physiological method has not settled the question of how does chloroform kill? It would, perhaps, be premature to say that method never will succeed; but we may, I think, confidently affirm that it must, to be of any real service to us, wait upon the steps of clinical research rather than attempt to settle questions of anæsthesia out of hand, and without reference to our hospital and bedside experience. Further, we have the incontestable fact that deaths under anæsthetics are, if anything, upon the increase, and this in spite of better teaching, the wider ventilation in the journals and in manuals of the most approved means of avoiding fatalities, and a recent propaganda, as far as chloroform is concerned, which seemed to promise immunity from death and danger if certain rules, familiar to most of us, were only kept in their entirety. In spite, however, of all this, deaths go on occurring, and even in the hands of specialists and men imbued to their finger-tips with faith in the innocuousness of chloroform. All this, then, must point to one of two conclusions—that whenever a death occurs it is either the direct result of the anæsthetist's want of skill, or of his lack of conscientiousness—as by allowing his attention to deviate from watching the all-important rhythm of respiration—or that there is something yet in the whole matter of which at present our philosophy has not dreamed. Surely we may reject the former hypothesis, for although Syme in 1855 said that "the differences existing between the methods in vogue in Edinburgh and in London fully accounted for the fact that deaths were rare in the one place, and comparatively common in the other," yet I think it will be admitted that now-a-days we know every method has supplied its holocaust of victims, and the most skilled and conscientious have lost their patients. If, then, we admit—as I think we must—that there are many points about the practice of the induction of anæsthesia which bristle with difficulties, there remains the question how best to grapple with them, and, if possible, reduce by orderly arrangement and precise investigation their number and formidable aspect. To effect this we may appeal to pathology, the results of necropsies, the clinical study of the effects of anæsthetics in human beings, and the chemistry of the reagents themselves—alike as regards their manufacture and the changes which occur after keeping, exposure to light, &c., &c.

Valuable as no doubt necropsies may be in the future, they have not in the past been of much service to us in elucidating the facts of the question before us. The changes made in the organism by chloroform or ether cannot be dissected by the scalpel, tested by the test-tube, or reckoned in the chemical balance. It may be a satisfaction to the person who gave the chloroform to be able to face the coroner's jury with the announcement that the patient's heart was undoubtedly fatty; but the scientific anæsthetist cannot but remember how many must have been the fatty hearts of patients who passed safely enough the rubicon of chloroform. In the *post-mortem* rooms of any large hospital how many normal hearts do we find? On the other hand, how many are the cases of chloroform-death recorded in the young and vigorous, with hearts healthy, and lungs free from disease? Again, necropsies, to be of any use, should be performed within a few hours of death under chloroform or ether. When possible, other means having failed to restore consciousness in a person poisoned by chloroform, bleeding to many ounces should be used, the blood being replaced by normal saline or milk, and the blood so withdrawn placed at once in a vacuum over mercury, to be reserved for subsequent gaseous analysis.

I do not wish to depreciate the value of *post-mortem* research, but I attach far less importance to it in the present connection than to the study of our cases during the actual process of the anæsthesia. It may, however, be interesting to inquire what facts have been elicited by the study of the cadaver.

Lallemand, Perrin, and Duroy found in the lower animals the lungs were rose-coloured, but free from congestion, unless a delay had been allowed before the necropsy was made, when hypostatic congestion became well marked.

The right cavities of the heart and veins were filled with dark fluid blood; the left were empty or contained clot (Sansom).

Snow, in his careful record of cases of death under chloroform, reports 35 necropsies; 16 showed disease of the heart—*e.g.*, thinning of the ventricular walls, valvular lesions, degenerations.

Turnbull records 44, and of these 20, or nearly 50 per cent., gave evidence of marked degeneration of the myocardium, pericardial, and valvular mischief.

A large number of sporadic cases reported from time to time, but not as yet collected, again afford evidence of the association of heart disease with fatalities under chloroform. It is necessary, however, to accept with caution many of such reports, because in too many cases a preconceived idea existed that such cardiac lesions were sure to be found in any given case.

As regards the other organs of the body, I confess we know little. The state of the lungs and the kidneys found *post mortem* shows no causal relation. As one would expect a certain number, which is by no means large, of cases of very grave disease—such as empyema, phthisis, &c.—have died under the anæsthetic. This forces upon my mind the belief that we must seek elsewhere for the *fons et origo mali* of death under chloroform, at least in many cases—and that is in the central nervous system. Necropsies do not give us aid here—first, because the skill of the neurologist has seldom if ever been called into requisition in making them; and, secondly, because it is very doubtful, indeed, if the *nerve* cells and commissures have any material impress left upon them by the act of chloroforming. In the physiological laboratory we know that the brain and cord undergo great and palpable changes during anæsthesia, and I have verified as far as possible, in the cases of brain and spinal surgery which I have had with my friend and colleague, Mr. Victor Horsley, the facts which I had learned whilst working with the lower animals. Still these changes, being mainly vaso-motorial, were lost after death.

I may, perhaps, quote a table which Dr. Sansom drew up some years ago which gives an analysis of 51 *post mortems*, and which draws attention to some salient points in making these examinations:—

	CASES
Blood:	
Dark and fluid	24
Lungs:	
Congested	18
,, in dependent parts	4
Loaded with blood	5
Normal	10
Heart:	
Accumulation of fat (right ventricles)	27
Distended	3
Little or no blood in left ventricles.	
Blood fluid in all but 2 cases.	
In one "air" (*sic*) was mingled with the blood.	
All cavities empty (in one case "spasm")	9
All cavities containing blood	13
1 case firm coagulum—galvanism has been employed.	
Auricles empty, ventricles not	2
Brain:	
Congested	9
Normal	14
Pale	7
Air in vessels	1

Let us now pass to the phenomena of anæsthetisation as we meet with them in our daily practice. They are best grouped under the following headings:—

I. Facts connected with the Patient.
II. Facts connected with the Operation.
III. Facts connected with the Anæsthetic.

In the system of recording which the Committee of the British Medical Association now engaged upon the clinical investigation into the action of anæsthetics has put forth, and books embodying which are now in your hands, an attempt has been made to elicit by questions all the important points covered by these three groups. But before considering the system in detail, it will be well to call your attention to the range of the inquiry upon which you are asked to embark. All cases in which an anæsthetic is given may be comprised under three headings:—

(*a.*) Those in which anæsthesia is attained without let or hindrance.

(*b.*) Those in which symptoms arise which are foreign to the usual course of anæsthesia—*e.g.*, failure of respiration, failure of heart, vomiting, undue struggling, &c.

(*c.*) Those in which death arises either during the induction of anæsthesia, or within so short a period after its cessation as to be associated casually with it.

Group (*a*) is important, in that we must have a sufficiently large number of cases of normal anæsthesia to serve as a basis for comparison, and in order that we may learn with greater exactness than is at present possible what are the variations of normal anæsthesia determined by conditions of age, sex, temperament, habits of life, racial traits, hereditary peculiarity, &c.

In dealing with Group (*b*) we come upon what I am sure will prove the most valuable source of future information, and it is above all things necessary that our records should be exact without being diffuse, and full without being unnecessarily prolix.

If, as is admitted upon all hands, persons die from paralysis of respiration, we should meet with every stage of respiratory paresis; the symptoms carefully observed should guide us into deciding whether the insufficiency of respiration arises from peripheral or visceral, central or nervous causes. In the one case waterlogging of the lungs from bronchorrhœa, in the other paralysis of the muscles of respiration may have been the cause of trouble. Or to take another example—the watchful anæsthetist might find that respiratory movements were being normally executed, but no air entering the lungs, and here symptoms might decide whether the impediment to inspiration arose from a centric cause—namely, spasm—or was the result of mere mechanical closing of the rima by the falling back of the tongue.

These are but suggestions how a study of respiration during anæsthesia would and does help one; it would be easy, did time permit, to formulate systematically the symptoms which arise and their significance as regards the various anæsthetics. I am accustomed to tell students that were an anæsthetist deprived of hearing, or touch, or smell, yet the remaining sense should be enough to guide him, and should tell him by its use directed upon the patient what anæsthetic was being employed, and what stage of narcosis the patient had reached.

But a close scrutiny of the respiration would soon lead the observer to notice a very close correlation between its force and rhythm and the action of the heart. To me it is a difficult matter to comprehend the strong stand which many most careful and distinguished observers have taken in asserting that chloroform has no primary effect upon the heart. I have seen in my physiological work heart-muscle as muscle absolutely killed by dosing with chloroform, and I have seen the heart of mammals, while in physiological connection with the central nervous system, become enfeebled to final cessation of its action, even when ample artificial respiration was uniformly maintained by air being regularly pumped in and out of the lungs by special mechanism, permitting of no possible chance of asphyxial processes being at work. Again, we know that under the conditions above recited, the whole heart undergoes dilatation. Such being the case it becomes, not only a matter of interest, but one of the most profound importance, that we should make the most exhaustive clinical investigation of the circulatory system of persons whilst under anæsthetics. Thus surely we should remember that the circulation comprises a double heart, an elastic arterial system, and veins and capillaries; we should mentally estimate by the symptoms the state of affairs in the visceral circulation, the pulmonary system, and last but not least, the vascular system of the brain. This may seem very formidable, and doubtless would be so to the unskilled tyro in precisely the same way that a raw student would find himself perplexed and harried, were he to be directed to work out and record the case of a patient in the manner familiar enough to the careful note-taker in a hospital where clinical work was thoroughly recorded. Still for practical purposes all this can be done by watching, *besides respiration*, the force, regularity, and rhythm of the heart and pulse, the colour of the skin, the dilatation of the vessels in the matrices of the nails, the ears, and mucous membranes. The jugular veins give one readily-accessible veins to study, and the colour, moisture, and warmth of the skin again teach us much.

My own observations, made for some years, and without, I think, any bias or prejudice, induce me to believe I have met with all stages of circulatory enfeeblement short of fatal syncope, and that in persons who, to all evidence, were quite free from respiratory difficulties. In these persons, I believe, we find pallor, cold, clammy skin, sometimes absolute blanching, the radial pulse growing smaller and smaller, and finally ceasing; the cardiac action becoming feeble and flickering; and the respiration only growing secondarily weakened, and then only showing it by regular but progressive shallowing of the respirations. With these I should contrast those who, suffering from asphyxial complications, evidence venous engorgement, marked by cyanosis, irregular, jerky breaths, with an insufficient air entry and exit, and a heart which beats on until, the right side becoming distended, its action grows hampered, and unless a return to the normal respiration takes place, cardiac action ceases. These two extremes, doubtless, meet in the countless intermediate cases which exist, and it is that we may all know the exact delimitations of such phenomena, that we urge a systematic inquiry into the matter.

These are all practical questions, for upon the recognition of the true nature of the case must depend the method of treatment. What, for example, could be more futile than to administer nitrite of amyl in a case in which respiration has ceased, and the heart is beating well and regularly? Or again, could any proceeding be more likely to remove what chance of recovery a partially asphyxiated patient had than to invert him, and pour more venous blood into a right heart, which was already unable to force its contents through a hampered pulmonary circulation? Would venesection be likely to help a heart which, belonging to an intensely anæmic patient, was, from its feeble resiliency, unable to stand up against the dilating power of the chloroform? But, surely, in a true chloroform toxæmia the abstraction of blood offers a reasonable chance of resuscitating a patient whose death is being compassed by the circulation through his system of a chloroform-laden blood.

We know from Snow's most able researches that 36 minims of chloroform distributed through the circulation of an individual of average weight and health would kill the patient, while 24 would only produce profound narcosis. And while speaking of the possible supervention of syncope, or heart-failure, under chloroform, I cannot refrain from noticing a strange oversight which certain persons have committed, who in stating most positively that cardiac syncope never occurs, assert that they are teaching what Syme and Simpson taught, and upholding the truth of a dogma those masters are supposed to have clung to, and handed down to their students. This error a few quotations will rectify. In a clinical lecture published by Syme in 1855 (which, by the way, is erroneously quoted as 1885 in the Hyderabad Commission's Report), he says, "All that I have done has been to follow the example of Dr. Simpson." While Sir James Simpson describes in the *Lancet* a case in which he himself gave chloroform when the patient died, and he himself attributes the death to syncope from chloroform; and further, in the remarks he made, says:— "According to all the experimental and clinical observations which have been made, chloroform appears capable of destroying life in two ways—namely, (1) by asphyxia; and (2) by syncope. Death by asphyxia can generally, if not always, be averted by at once arresting the inhalation of the drug whenever the breathing becomes noisy or stertorous—states which, as already mentioned, never occurred with the preceding patient. Death by syncope, or by sudden stoppage of the action of the heart, is undoubtedly far less under control, and has apparently formed the principal cause of the fatal issues in almost all the cases in which the patients have perished when under the use of chloroform."

It would serve no useful purpose for me to go through the problems of life connected with the other visceral systems as regards anæsthetics, but I may state that at present we have no scientific certainty about the behaviour of the kidneys in ether or chloroform patients. The statements that nephritic catarrh follows the exhibition of ether, wants, I think, further proof, and although we have no special column for it in our record-book, yet I am sure it would be a most valuable addition to our knowledge if we got reports of the quantity of urine passed, say, for 48 hours before and 48 hours after each operation, and if an analysis were made both before and after each operation. Again, in my experience glycosuria plays an important part in making our prognosis of the danger of the anæsthetic.

One of the most important issues of the problem before us is involved in the expression, "after-effects." These may be transient and slight, or severe and most serious, since it is not impossible their severity or persistence may jeopardise the success of the operation—*e.g.*, vomiting after a gastro-jejunostomy. Clinical evidence will, I feel convinced, teach us a great deal concerning the so-called ether bronchitis, the causation of uncontrollable retching and vomiting, and other as important matters. My personal experience convinces me that "after-effects" vary directly with the quantity of the anæsthetic given, and are in no slight measure influenced by the way in which it is given.

When we consider Group (*c*) we are met by the statement that so frightful is the loss of a patient under an anæsthetic, that the administrator is the last person from whom any reliable information can be obtained. But I think such a contention need not be seriously considered, for however keenly may the anæsthetist feel his position, he should, if he is a reliable man in his work, remain calm, observant, and ready of resource, and when the danger is passed, or has unhappily culminated in a fatality, his memory should readily enable him to make a clear statement of all that took place during a few minutes of peril.

And we need much carefully-gathered information about deaths which may occur—(i.) in the early stage of narcosis; (ii.) during the deeper stages; (iii.) towards the close or after the completion of the operation. It has been suggested that of the deaths grouped under (i.) some are due to fright; as, for example, some quoted by Sir James Simpson :—

CASE I.—John Hunter mentions an operation for hydrocele, in which the man was thrown into such convulsions that he despaired of his recovery, and also quotes a man dying from castration. Mr. Travers, in Vol. I. of "Constitutional Irritation," cites several cases of sudden death in surgical patients.

CASE II.—Robust middle-aged man, moderate-sized aneurysm in femoral artery.

CASE III.—A man who was subject of strangulated hernia.

CASE IV.—A man who had been bitten in finger by cat, died three minutes after excision of bitten part.

CASE V.—Brewer's servant, of robust frame; operation for thecal abscess, caused by splinter of wood penetrating beneath nail of thumb.

CASE VI.—Male; operation for strangulated inguinal hernia, by Dr. John Argyle.

CASE VII.—Strangulated hernia, by Prof. Millar.

CASE VIII.—Child; operation for abscess in neck, by Dr. Pattison.

CASE IX.—In a case belonging to Dr. Gilchrist, of Leith, a surgeon tried to treat a sacculated aneurysm at root of neck by a small quantity of hæmostatic injection.

CASE X.—Fracture of radius; adjustment of displaced ends of bone and application of splints and bandages, by Dr. Richard Mackenzie.

Possibly fright accounts for some deaths, not many. The same fear occurs in persons about to be etherised, and yet death in the initial stage of ether narcosis is quite a clinical curiosity; and probably only one, and that a doubtful one, has been recorded. Children, again, seldom die in the first stage of chloroform. Deaths in the later stages of chloroform narcosis usually arise from hampered respiration, or at least this forms a factor in bringing about the result. Diseased conditions of the lungs, especially emphysema, here play a part. The inability to expire freely prevents due exhalation of chloroform, while inhalation goes on.

Clinical evidence will be of the utmost use in elucidating the phenomena of deaths in the second and third classes—*i.e.*, those occurring in the course of the operation, and those taking place after its completion. The problem is only a simple one before the surgeon takes up his knife, for then the anæsthetic or fear is the only cause of death; afterwards, shock, emergencies such as hæmorrhage, blood entering the lungs, &c., complicate the issues, each probably contributing a factor in bringing about the fatal result.

Most important are the facts which shall serve to elucidate those deaths which take place after the operation is over and the patient is partly or wholly recovered from the influence of the anæsthetic. It is unscientific to put down such casualties to the anæsthetic, speaking vaguely of "ether bronchitis," "heart-failure after chloroform," until we have eliminated concomitant circumstances, such as the chilling effects of prolonged exposure, especially of mucous surfaces, the influence of the spray, loss of blood, &c. The only way to work out these points is by clinical research.

Further, among circumstances affecting the patient, we have yet to determine whether the hour of the day, the state of the weather, and electric potential, and so on, do not materially affect the risks of the patient. We know that the vitality of the individual is lower at certain hours—*e.g.*, 3 a.m., and has reached a maximum at 9 a.m.; while late in the afternoon the system is again jaded.

Of sex and age, except as regards proclivity to certain forms of ailment, we know very little as regards their influence on anæsthetics, and the same applies to race and climate.

As regards the nature of the operation much may be said. We know that posture and the surgical proceeding as regards the degree of shock it produces play no unimportant part in chloroform prognosis. Shock, again, in partial anæsthesia—*e.g.*, pulling about of intestines, reducing dislocations, has apparently caused many deaths. It is curious that experiments made upon the lower animals have not been in accord with our experience.

The last points to be briefly considered are those about the anæsthetic:—(i.) purity of drug, its quality, the quantity employed, and the source and method of its make; (ii.) mode of employment—*i.e.*, the method of administration; (iii.) personal knowledge of anæsthetist, and his responsibility.

There can be little doubt, I think, that a certain number of deaths under chloroform must be put down to inexperience or carelessness on the part of the administrator, and probably impure chloroform may account for some others, so that the headings given above cannot be held to be superfluous in the conduct of any clinical investigation into the action of anæsthetics.

In conclusion, I beg to thank you for the courteous hearing you have accorded me.

ART. XVII.—*Detachment of Retina.*[a] By JOHN B. STORY, M.B., F.R.C.S.I.; Surgeon to St. Mark's Ophthalmic Hospital.

THE well-recognised fact that, in presence of retinal detachment the most skilful oculists are generally both helpless and hopeless, has induced me to communicate brief notes of some cases of this affection which have so far been exceptions to the general rule, and have either partially or completely recovered. The ordinary course of a case of detached retina is too well known to require description. All are familiar with the sudden and rapidly-increasing blindness, the weeks of futile medication—perhaps combined with equally futile operation—and the final nearly complete blindness, with formation of secondary cataract. I might bring hundreds of such cases before the Academy, but to no good end. The few exceptional cases I am bringing forward are sufficient to show that all cases need not necessarily terminate in blindness.

CASE I.—Mrs. C., aged forty-one, from the County Tipperary, consulted me on April 23rd, 1890, with the complaint of a shade over her right eye of a month's duration, so that now she can only see in a little corner of her eye—viz., downwards and outwards. She had always been short-sighted in both eyes. Right eye V.=fingers at 2 m., and Galezowski's type No. 2 close to eye; left, also V.=fingers at 2 m., and type No. 0·5. Ophthalmoscopically high myopia and staphyloma posticum in both, and in the right eye a most extensive greyish detachment of the whole inferior half of the retina—the detached tissue thrown up in great balloons of a greyish colour, over which the retinal vessels rose and fell in their course from the disc to the periphery. After dilating the pupil a small rupture was visible downwards and slightly outwards. The macula lutea appeared to lie just above the detachment, and the field of vision corresponded with her statement and the position of the detachment.

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[a] Read before the Section of Medicine in the Royal Academy of Medicine in Ireland, on Friday, April 22, 1892. [For the discussion on this paper see page 78.]

The lady was unable to stay in Dublin for treatment, for which I was not sorry, as I regarded the case as hopeless; so I advised her to use atropin drops, to lie as much as possible on her back during both night and day, and keep the eye bandaged at her home in the country, and expected that that eye would see my face no more. Some two or three months afterwards she wrote to say that she had been using the drops, lying down, and wearing the bandage, and her eye was nearly well. This gratified me exceedingly, but I cannot say I believed that her statement was true. However, in April, 1891, she came to see me about the eyes of one of her children, and I then examined the eye most carefully without being able to detect any trace whatsoever of the detachment or of the rupture. The latter was so small that it would have left a very minute mark in any case; but the detachment was of large dimensions, occupying a good half of the retina, and bulging forwards in huge balloons towards the back of the lens. Tension was perhaps a little below that of the other eye, but vision was alike in the two—Wecker's type No. 1 easily at her far point, and her field of vision was perfect to ordinary perimetric tests. The change she observes is the loss of the shade, so that the field of vision is good "all the same"—not restricted to "one little corner" as when she was here last year.

Case II.—Mr. W. R. has been under my observation since the year 1878, when his retina became detached. He was then a student in college, highly myopic, but with good vision in one eye; the other had been blinded by the blow of a cricket-ball some years previously. In 1878 the upper outer-quadrant of his retina became detached, and the blind eye was enucleated by the surgeon under whose care he was at that time. The detachment was treated by the recumbent posture and bandaging for more months than I can now recollect, and the notes I took during that year have been lost. All I know is that he was kept lying down for months till his health became much impaired, and fears were entertained that the "cure" would end in permanent delicacy of his constitution. What occurred in the eye during that time was that the detachment gravitated down from the superior temporal to the inferior retinal quadrant. The earliest notes in my possession bear the date of May, 1879. The whole lower and outer portion of retina was detached, centre of fundus healthy, except for a large staphyloma posticum all round the disc and some speckling in macula. A large streak of opacity in vitreous, upper temporal, and lower nasal quadrants; can still read Jaeger No. 1 at 4 inches. Is walking about with very dark glasses, but after being out can hardly see anything in a room. The lower detached quadrant of the retina is nearly quite white.

In September the *status quo* was practically unaltered, *vide* chart and diagram [exhibited].

In May, 1880, vision and fundus much the same.

In 1884 he developed three chalk-like bands in his cornea, running vertically through the centre parallel to each other, and apparently just beneath the epithelium. These reduced his vision considerably for the time, and made me fear that the globe was in a state of commencing degeneration. However, they cleared away during the course of the summer, and although there is a faint trace of their existence still, he has had no further trouble from them.

In August, 1884, he could read Jaeger No. 1 badly, and the whole lower half of retina was detached up to margin of disc, and, if his sensations could be trusted, up to the macula also. He stated that when he leaned his head back the subretinal fluid lifted up the central portion of his retina, and destroyed direct vision. This symptom persists to a slighter degree still, but I cannot attribute it to the cause proposed by Mr. W.

The last occasion I have seen him was January, 1892—*i.e.*, fourteen years after the original detachment. He told me then that he was three months on his back in 1878, and was poisoned with iodide of potash. He still wears a light bandage on the eye at night. He can read by lamplight Galezowski No. 1—corresponds to Jaeger No. 2—but no concave glass raises V. up to $\frac{5}{50}$, M=18 D. Lower half of retina completely detached, but of fairly good colour. The long streak of black lines and dots still exists in the superior temporal quadrant. Can it have been a rupture? Cornea was quite clear. With this one eye of his he manages all the business of a large farm—superintending workmen, taking a spell at the hay himself, and buying and selling stock at neighbouring fairs.

CASE III.—Miss M., aged forty-five, consulted me first in 1882, suffering from myopia and striæ of opacity in the cortex of both lenses. Right eye c−10 D; V.=$\frac{5}{10}$?? Large staphyloma posticum. The condition of the left eye has no bearing upon the subject of the paper. I saw her again in Oct., 1888. She had had some iritis (serous probably), and the right pupil had one tag of adhesion to the lens at its lower border. She returned on Nov. 9th with detachment in the lower portion of the retina, the detachment being shallow, and very peripheral, and the retina of a good colour. V.=$\frac{5}{20}$? with −10 D.

Nov. 19th.—Eye congested, V.=$\frac{5}{30}$; detachment increased.

Nov. 20th.—Congestion greater; well-marked keratitis punctata; T+1. During past week detachment has slowly increased so as to occupy the lower half of retinal periphery, and detached portion more prominent. All along there have been floating opacities in vitreous. No rupture visible.

Nov. 22nd.—Tn. again.

Nov. 28th.—T−1; punctate spots on cornea clearing up.

Dec. 11th.—Tn. zonular vascularity of lower half of globe corresponding to the large iritic adhesion, and the keratitis punctata; anterior chamber very deep; dense keratitis punctata; iris muddy and congested.

Dec. 27th.—Keratitis less, but cannot detect the detachment.

Jan. 10th, 1889.—Still less keratitis, but cannot be certain that detachment has subsided, though I believe that it has done so.

Jan. 21st.—Fresh keratitis punctata; c—10 D, V.=$\frac{5}{30}$.

Jan. 23rd.—Keratitis greatly increased; T+1; deep anterior chamber.

Jan. 24th.—Worse; a small peripheral sclerotoma done at lower portion of anterior chamber about 3 mm. long, which reduced T. to −1.

Jan. 25th.—Scleral wound very vascular, Tn.; symptoms of weakness and sickness of stomach previously felt have ceased.

Jan. 29th.—T+?; cornea very hazy, and anterior chamber very deep.

Miss M. was not seen after this till July 4th, 1890, when her right eye had V.=$\frac{5}{15}$?? with −10 D; anterior chamber very deep; cornea clear; pupil active, except the lower border, where the adhesion exists. No sign whatsoever of any detachment in the right fundus, which can everywhere be easily examined.

Case IV.—Mr. P. consulted me in Dec., 1885, with the following history:—His right eye had been blind for many years. It first got dim, then flashes of light were seen, and straight lines looked crooked. Subsequently a cataract formed in it, and finally he got a blow on it. Now it is quite blind, with dislocated lens partially opaque; pupil ad maximum dilated, and yellowish lenticular shaped mass visible behind lens upwards and inwards, above which again a very bright red reflex is visible. Lens is greenish in colour, T+. Probably retinal detachment was cause of first loss of sight, and the injury accounts for the other phenomena. His left eye was highly myopic, with −10, or −11 D; V.=$\frac{5}{30}$?

In February, 1890, Mr. P. returned, with the statement that about a week previously he was troubled with twitchings of the lower lid of his left eye, after which he saw short specks falling, and a blur came in lower temporal portion of field of vision, in which quadrant also straight lines appear crooked. V. with −11 D = $\frac{5}{40}$; also deciphers Galezowski,

0·5. Vitreous full of floating opacities, and upper inner quadrant of retina occupied by a grey detachment. Disc horizontally oval, with large staphyloma above and below, which meet at temporal side in inverted image. Pupil wide, detachment slightly hypermetropic, while disc = 12 D by erect ophthalmoscopic examination. Next day he was worse, the detachment reaching to the optic disc; no rupture visible.

Mr. P. returned home, and remained under the care of Dr. Mouillot, of Gorey, from February till September. The treatment consisted in perfect rest in horizontal position, and the exhibition of salicylate of sodium.

In February, 1892, Dr. Mouillot kindly wrote to inform me that Mr. P. might be considered cured, as his vision was quite as good as it had been before the attack. He could read the smallest type, and conducted the business of a large school without difficulty. The retina, however, was of a paler colour in the portion detached than in the rest of the fundus.

The object I have in view in bringing this paper before the Academy is merely to record some exceptional cases of retinal detachment, which may lead us to hope for a more favourable result in some small percentage of such cases than we have hitherto been able to do. These cases are not at all singular. Several such cures and permanent improvements have been recorded by many continental writers. What is yet to be known is what causes the cure or improvement in these exceptional cases, and what type of case affords a hope of a favourable prognosis.

As to the causation of retinal attachment I have not much to say. It cannot occur with a normal intact vitreous, and there is a vast amount of evidence to prove that vitreous changes precede retinal detachment in all cases. Leber has attributed its sudden occurrence, and it generally does occur suddenly, to a rupture of the retina permitting the vitreous fluid to penetrate behind the retina. Others have held that a serous chorioiditis is connected causally with the detachment, and of late the theory that the ciliary body is in reality a secreting gland has given some support to this view.

As to treatment, pressure bandage, rest in bed, and diaphoresis is the conventional method. Its utility is very doubtful, but it should certainly be given a reasonable trial in every recent case. Many other methods have been proposed, but none have met with general acceptance.

The division of the detached membrane as advised by Bowman has now been nearly completely abandoned since Leber's observations upon the frequency of spontaneous ruptures. Paracentesis, through the sclerotic or aspiration of the sub-retinal fluid, and even the insertion of a permanent drainage tube of gold wire, has been tried, and in vain. The actual cautery has been applied to the sclerotic, pieces have been excised from the long-suffering iris, and one man at least has proposed to tenotomise the four recti and the two oblique muscles.

From a purely theoretical standpoint the most scientific treatment that has been proposed is that of Grossmann, who aspirates the sub-retinal effusion, and injects an indifferent fluid (0·75 per cent. salt solution) into the vitreous chamber. This he has done in three cases (*vide Ophthalmic Review*, 1883, p. 289) with not very brilliant results.

Galezowski has proposed to inject iodine beneath the retina, and Schoeler to inject it into the vitreous, both having the design of exciting a plastic retino-chorioiditis, which may re-attach the detached membrane.

As the object of my communication is merely to put on record the three exceptional cases I have described, I shall not take up the time of the Section by further remarks upon either causation or treatment.

ART. XVIII.—*Some of the Important Advances Made in Surgical Practice during Recent Years.*[a] By HENRY O'NEILL, M.D., M.Ch.; President of the Ulster Medical Society, and Visiting Surgeon, Belfast Royal Hospital.

GENTLEMEN,—I sincerely thank you for the honour you have conferred upon me by electing me President of the Ulster Medical Society for this year. When we think of the names of my worthy predecessors in this chair, and the good work they have accomplished, we may be justly proud of the share this Society has taken in advancing the science and art of medicine and surgery. While feeling proud of our past successes, our duty is to carefully study the important advances that are being made by the foremost men in the surgical and medical world, and strive to keep in line with them. At present we, as surgeons and physicians, are chiefly concerned with the cure of disease, but we are rapidly approaching the time when we shall become health officers, our duties then being to prevent rather than to cure disease.

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[a] Inaugural Address, delivered before the Members of the Ulster Medical Society, Belfast, on the 4th of November, 1891, at the opening of the Session of 1891-92.

During the past ten years bacteria have come to be looked upon as playing a most important part in the cause of disease and fermentation. In consequence of this, bacteriology has been raised to the position of a science. The growth of this science went on slowly for a long time, and the study of bacteria remained chiefly in the hands of botanists. Occasionally scientific medical men considered there was a causal relationship between the growth of certain bacteria within and without the body, and the ætiology of certain infective diseases. During the last ten years, because of the great improvements that have been made in the methods of cultivation of these organisms, and especially of obtaining pure cultures—that is, cultures which contain a single species of organism only—most valuable information as regards the function and life-history of these small specks of vegetable protoplasm has been rapidly accumulated. Pasteur's marvellous observations on yeasts first opened up the way for future workers. The organisms that have been found in certain diseases have been identified and classified. Their methods of propagation and the channels by which they are conveyed from one host to another have been determined, and the whole subject has been so prepared, by such men as Pasteur, Chauveau, Lister, and Koch, as to enable them to place before the world theories of the utmost importance. To Lister is due the chief honour in this department of science for the great work he has done in the field of antiseptic surgery, by the evolution and perfecting of which he has done more to relieve the suffering and to diminish the mortality in surgical cases than has been accomplished by any other surgeon during the last century.

Tuberculosis, one of the most common and fatal diseases, not alone in Belfast, but in Great Britain and the whole of Northern Europe, has now been proved to demonstration to be due to the presence of a specific micro-organism—the tubercle bacillus—first discovered by Koch in 1882. After this important discovery the pathology of tuberculosis underwent a complete change. Tubercle occurring in any tissue of an organism must now be considered as a specific disease, the bacilli as the direct cause of all the morbid changes, and their presence as the certain evidence of the disease. By recognising the nature of tubercular disease in the joints, glands, or skin in an early stage, it is now possible by adopting proper treatment to arrest it. In the early stage of joint-disease the morbid action is often localised, and therefore arrest is at least possible. Arthrectomy is now performed in joint disease in suitable cases, where the synovial membrane is alone involved, to prevent the disease extending to the articular ends of the bones. When tubercular disease extends to the ends of the bones entering into a joint, the more serious operation of excision or amputation may be required to prevent the disease from infecting the lungs and glandular system, and causing general tuberculosis and death. With the general treatment of tuberculosis in patients we are all familiar, such as seeing that they have good food, warm clothing, and the enjoyment of fresh air and sunlight; but in the case of patients suffering from tubercular disease of joints—especially of the hip, knee, and ankle—the most common seats of the disease in children and young adults, who have suffered from synovitis of these joints—it was almost impossible to permit them to enjoy the fresh air and sunlight until the late Dr. Hugh Owen Thomas, of Liverpool, by his untiring genius, invented and perfected his hip and knee splints. By means of these splints the joints can be kept steady and firm. Concussion or friction of the joint is prevented, and, therefore, patients while wearing them can enjoy exercise in the fresh air with perfect comfort and safety. Many valuable lives have been saved by the use of these splints.

Many theories have been advanced to explain why tuberculosis is not even more general than it is when we consider the great abundance of tubercle bacilli which is known to exist around us, and especially in close, badly ventilated rooms. It is a wonder that any one is left to even study this subject, but, with the bane, Nature has provided us with an antidote. And the antidote for tubercle bacilli, according to Metschnikoff, of the Pasteur Institute in Paris, is produced by the leucocytes and other cells named by him phagocytes, and the process by which these cells remove dead material and destroy or digest pathogenic micro-organisms he describes as phagocytosis. The leucocytes are called mikrophagi, and the fixed tissue cells, which are capable of performing the same function, makrophagi. Microbes, pigment granules, and fragments of tissue gain entrance into a cell. The cells which are known to possess phagocytic properties are the leucocytes, mucus corpuscles, connective tissue corpuscles, endothelia of blood vessels and lymphatic vessels, alveolar-epithelium of the lungs and cells of the spleen, bone, marrow, and lymphatic glands. Metschnikoff first studied phagocytosis in the tail of the tadpole, and found the separation of this organ, at the time this animal is developed, is accomplished by leucocytes. In the daphnia, the common water-flea, he studied the destruction of a fungus with which these insects are liable to be infected by the mikrophagi. When phagocytosis proved successful he observed the destruction of the fungus in the interior of leucocytes; on the other hand, when the fungi were present in such large numbers that the leucocytes were unable to destroy or digest them the daphnia died. Next he investigated phagocytosis in a number of diseases—erysipelas, anthrax, relapsing fever and tuberculosis.

In erysipelas the cocci are first attacked by the leucocytes filling the lymph spaces, and, later, by the fixed connective tissue cells. In the path of destruction he saw leucocytes loaded with cocci, the latter showing various stages of dissolution. In fatal cases of erysipelas the streptococci multiplied with such great rapidity that the phagocytes were unable to cope successfully with the disease. At the International Congress of Hygiene, held in London (1891), Metschnikoff gave interesting demonstrations on this subject. This doctrine of phagocytosis is strongly opposed by Holmfeld, Bitter, Prudden, and Nuttal. Osler, in a recent paper, gives the result of his own observations on the phagocytic action of cells. He shows very clearly how minute foreign particles are eliminated by means of the phagocytic action of the cells. Phagocytes are scavengers, which remove foreign dead particles from the tissues. Metschnikoff believed that the destruction of micro-organisms in the interior of phagocytes was an active process, and that the protoplasm had a sort of digestive action upon them. To prove the correctness of this supposition he made some experiments with the bacillus of tuberculosis. He injected a pure culture of the bacilli into the subcutaneous tissue of white rats; and, later, produced artificially suppuration at the seat of injection. Two months later he found bacilli in the pus corpuscles in an unchanged condition, and without having lost their power of reproduction. As in other experiments he had witnessed the destruction and disappearance of the same bacillus in living cells, he concluded that phagocytosis is an active process which can only take place in a living cell, and is suspended with the death of the cell. There are few at this time who regard the destruction and disappearance of microbes in phagocytes as an act of digestion. If, however, microbes in the interior of phagocytes are rendered harmless, or disintegrate, or disappear, this fact is an important one, and it is immaterial in what way this result is obtained, whether the microbes are digested by the protoplasm or whether some chemical substance in the cell body exerts an inhibitory effect upon them, or, finally, whether for want of proper nourishment they are starved. The results of experimental research have furnished positive evidence that infective processes terminate most favourably where the conditions described as phagocytosis are accomplished most satisfactorily. When the struggle between a microbe and a phagocyte turns out in favour of the latter the microbe does not multiply in the protoplasm, or ceases to do so before the protoplasm is destroyed; and as the microbe cannot leave without dissolution of the cell, it remains within its narrow confinement, and is destroyed either by some as yet unknown chemical substance or dies from starvation. In either event the vitality of the cell is not impaired, and the microbe disintegrates and disappears. If the conditions for the growth and development of the microbe in the protoplasm of the cell are more favourable, intra-cellular multiplication of the microbe takes place, the ptomaïns which are eliminated produce coagulation necrosis in the protoplasm, the cell disintegrates, and the intra-cellular culture is liberated in an active condition. In cases of unsuccessful warfare of the phagocytes against invading micro-organisms the mechanical obstruction composed of emigration corpuscles and embryonic cells is broken down, and the rapid increase of micro-organisms at the seat of of inflammation gives rise to extensive local and often general infection. Practically, it can be said that all therapeutic measures which influence favourably the process of phagocytosis are, in the broadest meaning of this word, calculated to exert a great influence in arresting or limiting infective processes.

KOCH'S TUBERCULIN.

During the past year we have seen the rise, progress, and fall of Koch's tuberculin, and those of us who have used it know something of its active therapeutic action, which in delicate patients can produce the most serious results. Still it is undoubtedly a valuable remedy if it can be so purified as to remove from it the excessive heat-producing agent. Dr. William Hunter, in a valuable paper published in the *British Medical Journal* of July 25th, 1891, gives the results of carefully conducted experiments, intended to show the composition and value of tuberculin as a therapeutic agent when freed from its dangerous elements. I had the opportunity recently of seeing his work in this investigation in the laboratory of the Royal College of Surgeons, London. Koch's tuberculin is a glycerine extract of pure cultivations of the tubercle bacillus. The remarkable properties possessed by it are, according to Koch, due to one active principle in such small quantity as to constitute probably little more than one per cent. of the whole, and he describes it as "a derivative of albuminous bodies."

ACTION OF TUBERCULIN.

Koch states that the various substances present in tuberculin other than its active principle have no action at all on the organism. Since all the activity of tuberculin is on this view dependent upon the presence of this one body, it is only fair to conclude that this activity must show itself in very different ways—(1) Partly by inducing local inflammation around tuberculous areas; (2) partly in producing a general constitutional disturbance the chief feature of which is fever; and (3) partly in favouring the growth of the tubercle bacilli, and thus favouring the recurrence of the disease. These three chief effects of tuberculin have been established by careful clinical and pathological observations. They vary in their character and intensity according (1) to the extent, character, and seat of the tubercular lesion, and (2) individual idiosyncrasy.

LOCAL EFFECTS.

Both the local and general action of tuberculin brings with it its own peculiar dangers. The dangers connected with its local inflammatory action are those incidental to the softening and absorption of tuberculous tissue, more especially the danger which Virchow's observations, fully confirmed as they are by clinical observation, have conclusively proved to be a real, although a rare, one—namely, the increased activity and further spread of active bacilli.

GENERAL EFFECTS.

The general effects include, in addition to fever, such general symptoms as headache, drowsiness, feelings of sickness, and *malaise*, aching pains in the back and loins, rigors, and occasionally severe depressant action on the heart. These symptoms indicate the action of an albuminous poison, especially the nausea, aching pains in the back, and weak action of the heart. These symptoms are very similar to those which are occasionally seen to follow the intravenous injection of defibrinated blood—blood containing various albuminous bodies, including certain of Wooldridge's "tissue fibrinogens." The fever is the most constant and characteristic phenomenon next to the local inflammation. Koch attached great importance to the fever, and the main details of his treatment being regulated by him according to its presence or absence. Dr. Hunter began early in January of this year to study the composition and therapeutic value of tuberculin, and amongst other things to ascertain how far it was possible to eliminate all substances having an injurious action and thus to obtain its remedial without any of its injurious effects.

SUMMARY OF RESULTS.

In their order of importance, as well as amount, the chief substances present in tuberculin are, according to Dr. Hunter—

(1.) Albumoses.
(2.) Alkaloid Substances.
(3.) Extractives.
(4.) Mucin.
(5.) Inorganic Salts.
(6.) Glycerine and Colouring Matter.

The only substances present in tuberculin with which its active properties could be connected were albumoses, organic bases of alkaloidal nature, and probably various extractives. His next object was to ascertain to which of these bodies tuberculin owed its characteristic properties. Observations on this subject were made first on mice and guinea pigs, and being satisfied that the various modifications of tuberculin were physiologically active, he suggested to Professor Watson Cheyne that the results obtained on animals might be equally successful in the treatment of tuberculous patients. Mr. Watson Cheyne agreed to this, and since the end of April has carried out the treatment with this modified tuberculin in King's College Hospital, and in Paddington Green Children's Hospital, using it in place of the original tuberculin. The patients treated have been suffering from lupus, joint, and bone disease. Mr. Watson Cheyne gave the result of his experience of the use of modified tuberculin at the last meeting of the British Medical Association, at Bournemouth, and stated he could only give a provisional opinion because the time is too short since the treatment of the cases to judge whether the improvement may be permanent or not, although several cases of lupus and joint disease improved considerably under the treatment adopted. He considers in surgery this treatment will probably take a place secondary to the more rapid and thorough operative measures.

Although, up to the present time, Koch's tuberculin has not been very successful in the treatment of tuberculosis, yet the valuable work he has already accomplished in the study of tubercular disease gives us the hope that his labours towards perfecting the cure of this terrible disease will ultimately be crowned with success. On October 22nd, 1891, Dr. Koch published a Report of tuberculin, in which he states that by adding to tuberculin alcohol of 60 per cent. a deposit is formed, which Koch considers to be as nearly as possible the active principle of tuberculin. In therapeutic action this purified tuberculin does not differ materially from the original preparation.

Closely connected with the study of the science of bacteriology is the study of the treatment of wounds so as to secure immediate union. Pasteur by careful experiment proved (1) that germs were the cause of fermentation in diseases, (2) that each fermentation was due to the specific action of a definite organism. Lemaire found that the addition of a small quantity of carbolic acid to fluids in which putrefaction and fermentation would ordinarily take place, prevented the occurrence of these processes. He considered pus-formation was the result of the action of germs falling from the surrounding air into a wound. By applying germicidal reagents to wounds and suppurating surfaces, he attempted to destroy these organisms outside the body whilst they were attacking the weak points. This was really the first step in the direction of an antiseptic treatment of wounds. Whilst treating by his method wounds in the human subject and dog he saw that pus remained entirely absent or was reduced to a minimum, putrid alterations were absent, and the wound healed rapidly. The chief importance of this theory was afterwards fully worked out by Lister, who saw that owing to the difficulty of killing germs, after they had once made their way into the tissues, it was absolutely necessary that such organisms should be prevented from gaining access to the wounds at all, and it is upon the attainment of this end that his well-known antiseptic treatment depends for its success. Accepting the truth of this statement that germs were the cause of fermentation, Lister also came to the conclusion, independently, that germs entering the wounds from the outside might be the cause of suppuration, and since germs were floating in the air.

were suspended in water, and were attached to the instruments and bandages that were used in the treatment of wounds, he determined that it was necessary, by using some germicidal agent, to kill such adherent and suspended organisms before the various materials mentioned were allowed to come in contact with the wounded tissue. With a rare combination of experimental resource, patience, and genius, Lister gradually built up a theory and practice of antiseptic surgery which rapidly revolutionised the treatment of wounds.

(*To be continued.*)

Art. XIX.—*The High Death-rate in Irish Towns and its Causes.*[a] Revised and brought up to date. By John Strahan, M.D., M.Ch., M.A.O.

Since mankind began to live together for safety and society, villages, towns, and cities have always been unhealthy as compared with the surrounding country. Everywhere there is a marked contrast between the mortality in town and in country. Before the birth of sanitary science the contrast was much more marked than at present, and in England and Wales the contrast becomes less marked year by year. The death-rate in towns is coming down more rapidly than that of the country, for the reason that there are greater sanitary defects in towns which are amenable to remedy. A hundred years ago most large towns were in a terrible condition, mere nests of disease and death. My contention is that large Irish towns have lagged behind English towns in sanitary improvements, and that, consequently, Irish towns show a higher death-rate than the majority of English and even Scotch towns. It is well known that the death-rate rises just in proportion to the density of population, as proved by the late Registrar-General, Dr. Farr. Taking all England, the deaths in towns are more numerous than those in the country, as 144 to 100—that is, there are nearly half as many more in towns in proportion to population. I must refer those who want figures to the Fifth Annual Report of the Registrar-General, page 419. The increase of mortality in proportion to density of population is clearly due to the concomitant bad sanitation, especially to that worst of all sanitary defects—overcrowding. One thousand people can be aggregated on one acre with a very low death-rate, as in the Peabody model cottages, if ventilation and removal of filth be sufficient. Still, the authorities should attend to the good rule given by Dr. E. A. Parkes, that whatever be the size of houses, the amount of ground *not* occupied by them in any given area should be considerably in excess of the amount actually taken up by the houses. Far better to prevent overcrowding of space at first than to remedy it in after-years by buying up ground at enormous cost, as is being so freely done in Birmingham, and is being done to some extent in Belfast. What is the use of allowing the very defects which made all old towns unhealthy as soon as they assume any considerable size to be perpetuated in the new parts of our towns? By thus providing open spaces as reservoirs of fresh air, Birmingham has greatly and directly reduced its death-rate. Nearly 90 years ago the medical practitioners of Liverpool warned the Corporation that too many houses were being erected on the ground, and that they must prove unhealthy. No heed was given, and now Liverpool has to thin the overcrowded districts at enormous cost. Again, look at the blindness and infatuation of corporations allowing any open spaces which already exist in their towns to be built up instead of strictly preserving them. Unfortunately, parks at the outskirts will not do. To reduce the death-rate open spaces must be formed in the very centre of large towns and in the midst of all populous districts. We have an example of this municipal folly in Belfast, where the beautiful tree-planted square of the Linen Hall is to have a City Hall erected upon it, notwithstanding the indignant protest of a large number of the citizens.

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[a] Read before the Ulster Medical Society, May 4, 1892.

When men began to build towns they were little but savages in many respects; they only looked to safety from enemies and shelter from the elements. In cold climates they actually huddled their houses together for heat, and even in most eastern towns, notwithstanding the heat, streets were usually so narrow that only an ass or mule with a pack could pass. Indeed, at present, many of the streets in Cairo and other such towns are so narrow that the opposite householders might shake hands across. The consequences were what we now know must be. When such towns grew to any size they simply became plague-spots. No doubt in the old cities most of our infectious diseases were first evolved. Harmless micro-organisms became pathogenic, and zymotic diseases overran the world. Sanitary science may be said to have commenced in European countries since the Royal Commission reported on the "Housing of the Working Classes" in 1844. This Commission was obtained through the exertions of Sir Edwin, then Mr. Chadwick. He only recently died, so we may well congratulate ourselves on the progress made in the half of one man's lifetime. Since that Commission the authorities have been engaged in undoing what the ignorance of men had done in the way of town building. Is it not time that the perpetuating of glaring sanitary defects in new buildings and streets should be sternly put a stop to? Is it not time that all glaring defects at present permitted to keep up the death-rate of Irish towns should be rooted out, however sanctioned by long usage? For instance, is the extensive keeping of pigs in small back yards of small houses in crowded districts not a disgrace to a city like Belfast? Each of these pigs would require as much air as a man; some yards have five, six, or more, so that we may say the population of some streets is needlessly doubled. The harm these pigs and other animals cause is incalculable. The overcrowding virtually caused by them, the pollution of the air, the accumulations of decomposing matter, the saturation of the soil with urine and excreta, all, no doubt, contribute to place Belfast in the shameful position of having the largest death-rate from typhoid fever of any town in the three kingdoms during the last ten years (Sir C. Cameron). London had a death-rate of 80 per 1,000 less than a hundred years ago. It has now been reduced to 19, and it is the healthiest large town in the world. Yet many of its streets are both very narrow and very old, and many of its sewers must be of an obsolete type. How is it then that its death-rate is so much below that of Belfast, comparatively a new city, with so many natural advantages that it ought to be one of the healthiest of towns? Belfast has scarcely a tenement house. It is, indeed, the best example of the small house system which originated in the north of England. Belfast has fine wide, new streets, where the wind can sweep down from the surrounding hills with the slightest possible obstruction. It has a fair quantity of open spaces and trees within its boundaries. It is exceedingly well spread over the ground, and, so far as the streets go, it is kept very clean. But though outwardly clean the ashpits and yards are not so well looked to. Animals of all sorts, and especially pigs, abound where there is no proper space or accommodation for them. Then there is the worst evil of all—overcrowding—and that in an extremely bad form—viz., the occupation of a small house by two or more families. If ever the death-rate of Belfast is to come down to that of London or Edinburgh this fatal system of sub-letting small houses must be put an end to. Another relic of the barbarous past is the pouring of the whole sewage of a town of a quarter of a million of inhabitants into the harbour. The town has been and is growing by leaps and bounds, and what did very well when it was a village is both disgusting and dangerous now that it has become a large city. Except the harbour and river, which now constitute a huge foul, open sewer, be purified, we need not look to have typhoid ever absent, summer or winter, and our chances if visited by cholera would not be bright. In the river the tide leaves many square miles of slob-lands exposed at low water. On these mud-banks enormous deposits take place of solid sewage-matter. Human fæces are plentiful, and the "fæcal smell" is almost overpowering at the railway stations on both sides of Belfast Lough for at least six miles down each side. This fæcal smell, mingled with the smell of salt, can often be felt over large sections of the city itself when wind and tide are favourable. To all protests as to this state of things the answer for many years back has been "the main drainage scheme will rectify all that." This main drainage scheme is now approaching completion, and it is to be prayed it may do some good, but no sane man believes that it will entirely remove this huge nuisance and purify the river. In the end these extensive slob-lands and the banks of the river Lagan will have to be embanked and the river narrowed and deepened, so as to prevent exposure of solid sewage spread over many miles of surface. This plan should have been entered upon many years ago. It would probably have been as profitable as useful, as the ground recovered would be very valuable, and far more than pay the cost of enclosing it. But, after all, the east end of London has many large districts far worse than anything Belfast can show, and though the death-rate of London is below 19, sanitary progress has by no means ceased or done all it can do even in London. A really sanitary city should have many advantages over the country, and we should be able to reduce town death-rates below those of the country. Time will not allow me to enter on this most interesting question, but that it is possible the fact that the prison mortality, which in Howard's day was appalling, was only 7·8 in 1883, or one-third of that of our large towns. If prisons can be reduced to this rate most towns surely could approach them. There never was a clearer case of cause and effect than the way both town and country mortality in England have been and are still being reduced.

In 1873 the town rate was 23, the country 18·4; in 1883 the town rate was 20·8, the country 17·7. The improvement in the death-rates in India is another great proof of the efficiency of sanitary measures. Indian cities and prisons used to be regular death-traps, but the "whiteman's grave" has actually become a health-resort, and the three great cities have death-rates nearly as low as those of our Irish towns. I reach the conclusion, then, that in the "good old times" all large towns were abominations; that this state of things has been greatly remedied; that this improvement has proceeded to different degrees in different countries and even in different towns of the same country; that no large town has as yet reduced its death-rate to that of the surrounding country.

The next point I mean to prove is that Irish towns generally have lagged behind English towns in their advance. Nothing strikes one more than the fact that, no matter what year's returns we lift, we find that the Irish towns have a much higher death-rate than the English or Scotch. I need not load my paper with statistics to prove this. The fact is self-evident to anyone who keeps an eye on death-rates. The fact is the more surprising as the death-rate of Ireland as a whole, and still more its rural districts, is much below that of either England or Scotland. So very low are Irish rural death-rates that even when the towns are included the total Irish death-rate is one of the lowest in the world. According to "Barker's Facts and Figures" for 1892, the average death-rate in the 20 years, 1861–80, for the United Kingdom, was 21·2; for England and Wales, 21·9; for Scotland, 21·9; *for Ireland* (17 *years*), 17·5; for Denmark, 19·7; for Norway (10 years), 16·9; Sweden, 19·2; Austria, 31·1; Hungary (5 years), 36·1; Switzerland (11 years), 23·6; German Empire (9 years), 26·9; Prussia, 26·8; the Netherlands, 24·7; Belgium, 22·8; France, 23·6; and Italy (18 years), 30·0. Thus Ireland stands second of the countries most advanced in civilisation and sanitation. During the decade 1861–70 the death-rate in all Ireland was as low as 16·8; the next lowest being Sweden, with 20·0; and Denmark, with 20·1. England during the same period had a rate of 22·6, and Scotland 22·1. The various Australian Colonies are the only places in the world where the mortality is lower than in Ireland. Thus the mean rate for the 25 years, 1865–89, is, for New South Wales, 15·45; Victoria, 15·64; South Australia, 14·57; Queensland, 17·69; West Australia, 16·25; Tasmania, 15·23; and New Zealand, 11·71. Probably the last-named is the lowest rate in the world for any extensive stretch of country. But these colonies have every advantage the sanitarian could desire, an important point being the general absence of large towns; for, judging by what we read of Melbourne, large towns even in Australia are calculated to run up the rate for the country in which they exist. It may be said that is the reason the rates for England and Scotland are higher than that of Ireland—viz., that Ireland has comparatively few large towns. Of course this has its influence, but the towns in Ireland, large and small, present such a contrast to rural rates that I think they affect the total rate for Ireland more injuriously than do the more numerous towns of England, &c. Then, compare the urban rates of the two countries, although most of the Irish towns are so small comparatively. The Irish rural rate taken by itself is surprisingly low. Taking the figures of the Registrar-General, the average rate in the decade 1871–80 was only 16·6. The town rate in Ireland, though it takes in the unions in which the towns are situated, and which often cover many square miles of country all around, was during the same period 22·5, or 5·9 per thousand more than the country. In round numbers, the deaths among a million of town-dwellers in Ireland would exceed those among a million of country people by 6,000 per annum. Or, if the rural population died as fast as that in the towns, there would be an increase of 22,000 deaths every year. By running the eye down the list of death-rates in Irish counties (1871–80) one can tell the counties that have large towns by the high mortality—for instance, Mayo 13·9, Sligo 14·1, Roscommon 14·3, Leitrim 14·4, Galway 15·2, Donegal 15·2, Clare 15·6, Fermanagh 15·7, Longford 15·7, Cavan 16·1, Tyrone 16·4, Monaghan 16·5, Kerry 16·6, Wicklow 17·1, King's County 17·4, Londonderry 17·7, Kildare 17·7, Meath 17·8, Tipperary 18·1, Queen's County 18·1, Cork 18·6, Limerick 19·3, Louth 19·3, Westmeath 19·4, Down 19·4, Wexford 19·7, Carlow 20, Kilkenny 20·4, Antrim 20·7, Waterford 22, Dublin 26·2. This list will serve the useful purpose of showing that the really rural counties of Ireland have an astonishingly low death-rate—for instance, in despised Connaught we have rates below even the Australian colonies, with the single exception of New Zealand—Mayo having a death-rate of 13·9. Hence we may conclude that naturally Ireland is one of the most healthy climates in the world, and by a long way the healthiest in Europe. As we shall see presently, even in the case of consumption and tubercular diseases, which most people think rather prevalent in Ireland, it is the towns which do all the harm, Connaught being almost as free as Australia. Such being the case, it is all the more shame that the Irish towns should offer such an unfavourable contrast to those of England and Scotland. At present the average death-rate of Belfast is 25¼, and 15 years ago it averaged 28½ (Dr. Dempsey, Presidential Address, Ulster Med. Soc., 1890–91). Dublin is still worse, and the smaller towns often equal or surpass the large ones in this respect. Contrast such rates with those of Nottingham, Huddersfield, London, Birmingham, Wolverhampton, Bradford, Oldham, Leeds, Preston, Liverpool, and Sunderland, whose death-rates range in order mentioned from 14 to 22. Take Birmingham, which occupies a middle position among the towns mentioned, the population is nearly double that of Belfast, and its average death-rate 19. If the Belfast rate were reduced to that of Birmingham, the saving of life would amount to 1,514 per annum. While we give the sanitary authorities of Belfast all credit for reducing the Belfast rate by three per thousand during the last 15 years, still we cannot see any impossibility of reducing it to the Birmingham rate. So that we may say here are 1,514 people losing their lives annually in Belfast, victims to insanitary and probably remediable conditions of their surroundings.

CAUSES OF THE HIGH DEATH-RATES IN IRISH TOWNS.

If we look into the matter, we shall find the great difference between town and country in Ireland to lie in three groups of diseases which nearly entirely make up the increased deaths in towns. To take recent figures from Dr. Grimshaw, we should first state that the total rural death-rate is 16·6, the total town rate 22·5; the rate for all Ireland, 1871–80, is 18·3; or perhaps it will be plainer as a table:—

		All Causes	Principal Zymotics	Phthisis	Other Diseases of Lungs
Town rate	-	22·5	3·2	2·8	3·8
Rural rate	-	16·6	1·8	1·6	2·3
All Ireland	-	18·3	2·2	2·0	2·7

These three groups comprise more than one-third of the total mortality in Ireland, and in each group the death-rate in towns far exceeds that of the average for Ireland, and, of course, still more for the rural districts. The principal zymotics in towns exceeds the average for all Ireland by 10·6 per ten thousand, phthisis exceeds by 8·1, and diseases of the lungs by 11·4 per ten thousand. The same groups in towns as compared with rural districts exceed by—principal zymotics, 14·5; phthisis, 11·3; other diseases of lungs by 15·8 per ten thousand. *These three groups, then, contain the secret of the waste of life in Irish towns.* In dealing with this question it is difficult to treat phthisis and diseases of the respiratory organs separately, as they are, in fact, often combined in causing death. If we take the two groups together we find that during the decade of 1871–80 *they caused more than one-fourth of all deaths in Ireland.* Taking the number of deaths per ten thousand for greater exactitude, we find that in town districts the death-rate from phthisis is 27·7; other chest diseases, 38·4; both = 66·1; while in rural districts the rate from phthisis is 16·4; from other chest diseases, 22·6; both = 39·0 per ten thousand. So that the mean death-rate for lung diseases in Irish towns is no less than 27·1 per ten thousand over that of the rural districts. These figures are easily reduced to the rate per one thousand by moving the decimal one place to the left. If we take the figures for sickness we get a very similar result:—

	Town Districts	Country Districts
Diseases of respiratory organs	1·61	1·18
Phthisis	·63	·46
Total sickness per 10 thousand	2·24	1·64

Here we see that on Census night 2·24 per ten thousand of townspeople in Ireland were ill with chest diseases as compared with 1·64 in the country. From these facts it is evident that the predominating cause of both sickness and death in Irish towns is lung diseases and not infectious fevers, as many imagine. No doubt fevers have a great influence, and are also more common in town than country, whether measured by the average decennial death-rate or by the return of the numbers sick during the taking of the Census.

FEVERS IN IRISH TOWNS AS SHOWING THEIR BAD SANITARY CONDITION.

We now come to a most curious and interesting fact, which of itself is quite enough to prove how bad is the sanitary state of our Irish towns. The death-rate (1871–80) from fevers was 32·2 in the towns and 17·7 per ten thousand in the country. And now we come to the curious fact—Those ill of fevers in towns reached the rate of 5·5 per ten thousand, the country rate being 5·0. So we see there was nearly as large a proportion ill with fever in country districts as in the towns, yet the death-rate in towns was as nearly as possible double the death-rate in the country. The numbers ill being nearly alike, twice as many die in the towns as in the country. Nothing could possibly show the sanitary defects of our towns better. Bad food, bad clothing, badly-ventilated and filthy houses, decomposing matter constantly polluting the air—all these must surely be present to a great extent to so reduce the vitality of the people that twice the number attacked by fever perish in our towns as compared with the country. In Irish towns the mortality from every disease is higher than in the country, but time would entirely fail us to examine the returns further. However, if we look at the figures given above as to the numbers ill in town and country from phthisis and chest diseases, we shall see that the difference in numbers ill was very slight compared with the difference in mortality. In the country there were 1·64 in ten thousand ill; in towns, 2·24; while 27·1 per ten thousand died in towns of chest diseases over the rate in rural districts. These facts alone would convict the Irish towns of being very insanitary places, as the late Dr. E. A. Parkes classed both acute and chronic diseases of the chest among the "preventable diseases." In his book, "Public Health," p. 65, he says:—"The amount of the infectious, or so-called zymotic diseases, must be always carefully noted; but there are many other preventable diseases quite as worthy of attention, and especially the *acute and chronic chest affections*, which are *largely owing to removable unhealthy conditions* of *atmosphere* and *mode of life*." Why, if Belfast had the chest diseases which usually account for more than one-fourth of the deaths, and the typhoid removed in large measure, it would be the healthiest city in the kingdom. Yet we know from actual experience that Cardiff had its death-rate lowered from 33·2 to 22·6 by sanitary works; its typhoid rate lowered 40 per cent., and its phthisis rate lowered by 17 per cent.; while Salisbury had its typhoid rate reduced 75 per cent. and its phthisis rate by 49 per cent. Many other towns can show similar results, principally from draining a wet and filth-saturated subsoil. Pettenkofer holds that typhoid breaks out when the ground water gets low, especially after being high, but that only applies to places where the water supply is from wells in the soil of the place, as the sinking of the water allows decomposition to go on with increased vigour in the soil, and the products filter into the wells. In the large number of English towns which were so much benefited by draining the soil, the water was obtained from a distance, as is usual in this country.

ILLUSTRATION OF EFFECTS OF SANITARY WORKS ON TYPHOID.

The death-rate of Danzig before and since the introduction of an improved water-supply and a proper sewerage is most instructive. In 1869 the new water-supply was completed; the new sewerage in 1872. In the nine years previous the general death-rate was 36·39 per thousand. Since 1871 it has been 25·56, or 7·83 per thousand less, although the latter period includes the small-pox epidemic of 1872, the heaviest since 1838, and the cholera of 1873. As to typhoid, from 1863 to 1871 the typhoid death-rates per ten thousand were 11·2, 7·7, 9·8, 12·3, 12·3, 8·9, 7·0, and 11·0; while from 1872 to 1883, with the new sewerage, they have been 8·0, 4·1, 5·1, 3·3, 2·6, 2·7, 1·9, 1·8, 0·8, 1·4, 2·1, and 1·0—giving for the former period an average of 9·9, and for the latter 2·9; or for the last six years 1·5. It is worthy of note that the typhoid death-rate was not appreciably affected by the new water-supply alone. It was not until the completion, three or four years after, of the sewerage that the improvement became manifest (*Centralblatt für Gesundheitspflege* 1885, 1 *Heft*). There is a lesson for Dublin and Belfast here.

During the decennium 1871–80 the mortality in every disease except three was greatest in Dublin. In whooping-cough, phthisis, and diarrhœa, Belfast stood highest. As regards whooping-cough, this is probably due to the fact that the birth-rate is much higher in Belfast, so that there are more young children, the class affected. The excess of diarrhœa may have a similar explanation, along with the fact that the Dublin water is better. But the fact that Belfast stands highest for phthisis is partly due to the principal occupation of the people—50,000 people work in flax mills, a large proportion being young girls. It is a remarkable fact that while the deaths from phthisis were 33·4 and 30 for North and South Dublin, and 38·2 for Belfast, the deaths from other chest diseases were 52·9 and 53·3 for North and South Dublin, and only 49·9 for Belfast.

We have now proved that Irish towns greatly exceed the rural districts in death-rates, and that three groups of diseases—the fevers, phthisis, and the other chest diseases—make up more than one-half of the deaths. We have now to see how Irish towns stand as compared with English towns. Taking the Registrar-General's return for the third quarter of 1891 (the latest when this paper was written), we find the total Irish death-rate to be 14·6, the total English 15·9. The Irish rate was 0·1 under the average for the corresponding quarter for the last ten years—1881–90. The death-rate in Leinster was 16, Munster 13·5, Ulster 15·1, and Connaught 12·4. Where could so low a rate be found again? The rural rate for all Ireland was only 13·1, the total town rate 19·2, the Dublin rate 20·8, the Belfast rate 20·1. So during the summer quarter even the towns stood fairly well. But let us take figures for a longer period and compare them with thirteen large towns of the United Kingdom. The average yearly rates during the decennium 1879–88 were: London 20·5, Liverpool, 25·1, Birmingham 20·3, Manchester 26·9, Leeds 22·1, Sheffield 21·7, Bristol 19·4, Bradford 19·9, Dublin 28·8, Belfast 25·2, Cork 24·7, Edinburgh 19·6, Glasgow 25·3. In this list Belfast is No. 10, but though Manchester and Glasgow rank above it, there is only a small fraction between them—the lowest rate being put at the top of the list. The three large Irish towns are almost at the bottom, Cork being No. 8, Belfast 10, and Dublin 13, or the very last, as having the highest mortality in the three kingdoms. True, the differences are but small, but then the Irish towns ought to be at the top by a good distance, as Ireland has a much smaller rate than England or Scotland. Again, if Belfast were as far advanced in sanitation as some English towns, it should have a much lower rate than the majority of them, as it has so many advantages. It is almost entirely a new town, with wide, straight streets, the soil not saturated with filth as in old towns, no tenement houses, few old slums or rookeries, a good water-supply, splendid site, with the ends of many streets opening towards the mountains on one side and the river at the other. The town is very well spread over the ground, is the best example of the small house system, has few old rotten drains or houses. Draughts of fresh air can blow freely from the mountains to the lough through multitudes of wide, straight streets and so flush out the foul air. Then the birth-rate is not very high—33 per thousand against 37 in Glasgow. The great disadvantage of Belfast is that 50,000 people work in flax mills, the sharp dust of which is so destructive to the lungs. As regards sanitary defects, the fearfully polluted state of the river, the harbour and even the lough for some miles down is the worst. Next comes the very prevalent system of sub-letting small houses only intended for one family, and the keeping of pigs in small back yards. These defects produce a bad form of overcrowding. This must be looked upon as another great cause of the alarming prevalence of phthisis. A third great cause of phthisis is a very damp soil—a high level of ground water which our present system of sewage does not seem at all to remedy. Belfast stands first for deaths from typhoid in the three kingdoms; and as it is also above Dublin for deaths from phthisis, presumably first in the three kingdoms for that also. Dr. Buchanan in England and Dr. Bowditch in America have shown how the deaths from both typhoid and phthisis can be reduced by drying the soil. The modern example of Danzig teaches the same lesson, and all show the necessity that exists for draining the soil of Belfast.

INFANT MORTALITY.

Infant mortality is looked upon as a good test of the health of a district. Here, again, Ireland as a whole has great advantages over Scotland and England. Taking the latest statistics I can find ("Barker's Facts and Figures" for 1892), we see that the average deaths under one year to 100 births during the 19 years ending with 1883 were 14·92 for England, 12·20 for Scotland, and only 9·50 for Ireland (for year 1887). In this respect, indeed, Ireland stands best of any country in the world, the next being New Zealand, with 9·7 per cent. of infant deaths; while Wurtemberg has the highest rate—31·25. The annual death-rate for children under five per thousand is for England 167·8, Scotland 135·3, Ireland 115·5. This is largely due to the fact that a much larger proportion of the population in England dwells in large towns. Thus, in 1881, 56·3 per cent. of the population of England lived in towns of over ten thousand inhabitants; in Ireland only 16·3 per cent. As children are so much more susceptible to the injurious effects of bad sanitation, the unhealthiness of all large towns is greatly accentuated in the case of children. During the ten years 1879–88 the percentage of infant to total deaths in the 13 largest towns (over 200,000 population) was: London 24·7, birth-rate 33·66; Liverpool 25·1, births 35·0; Birmingham 28·3, births 35·27; Manchester 24, births 36·1; Leeds 27·2, births 34·4; Sheffield 27·4, births 35·3; Bristol 23·5, births 32·1; Bradford 25, births 30·1; Dublin 18·8, births 29·31; Belfast 19·4, births 33;

Cork 13, births 26·56; Edinburgh 20·3, births 30·46; Glasgow 21·7, births 37·0.

From a comparison of the birth and infantile death-rates, Dublin has the highest infant mortality in Great Britain, although it has the smallest birth-rate but one (Cork), and although Ireland as a whole has the lowest infant mortality in the world. The proportion of deaths under one year to 1,000 registered births during the ten years 1879–88 being 184 for Dublin, the next highest being Liverpool with 180; but the birth-rate for Dublin was only 29·31 compared with 35 in Liverpool; so for those ten years Dublin had the highest general death-rate in the three kingdoms—28·8—and the highest death-rate under one year per thousand births—184.[*] In Dublin they cannot plead the working out of the mothers, as Dublin is not a manufacturing town. Perhaps we may get a clue to it in the fact that, taking the 14 largest towns in the three kingdoms, Dublin has also the very highest proportion per thousand of the population of cases of drunkenness at the police courts—viz., 35·7. We are very sorry to say that Belfast stands next with 25·9 per thousand. Contrast these fearful numbers with 1·5 for Bradford, 9·2 for Edinburgh, 4·3 for Bristol, 2·6 for Sheffield, 5·4 for London, 6·6 for Birmingham, 8·4 for Nottingham, 4·3 for Leeds, 8·2 for Salford, 21·4 for Liverpool, 21·1 for Glasgow, and

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[*] We are happy to say Dublin is improving in this respect, as a correspondence in the British Medical Journal, Oct. 8th, 1892, pp. 821–2, will show. Dr. Grimshaw, Registrar-General, gives a table of deaths under one year per 1,000 registered births in 13 large English towns during the 10 years, 1882–91, which shows that Dublin stands better for these years than Liverpool or Manchester, though it exceeds all others.

AVERAGE ANNUAL RATE, 1882-1891.

Towns	Per 1,000	Towns	Per 1,000
London	152	Bradford	168
Liverpool	184	Dublin	176
Birmingham	169	Belfast	153
Manchester	182	Cork	121
Leeds	174	Edinburgh	132
Sheffield	173	Glasgow	147
Bristol	143		

Sir C. Cameron shows (p. 821) that the infant mortality is—

To 1,000 Births Registered	England and Wales	28 English Towns	London	Dublin
For 1890	151	172	163	166
For 1891	149	167	154	165

But the Editor of the Brit. Med. Jour. points out that it is not fair to compare Dublin with 28 large English towns, as only 12 are as large as Dublin—many much smaller. Still, it is very satisfactory to see such an advance in the position of Dublin, and a further strong proof of our argument that the disgracefully high Irish figures are quite capable of being brought down to, and below, those of England.

19·3 for Manchester. Belfast and Dublin are thus shown to exceed all the towns of over 200,000 in a fearful degree except Liverpool and Glasgow, in both of which a large proportion of the population is Irish. Perhaps drunkenness may be put down as a factor in the high death-rate of Irish towns. So, at least, Dr. Grimshaw thinks as regards the frightful infant mortality of Dublin, which he attributes to the following reasons:—1st. The large proportion of very poor in Dublin. 2nd. The number of old rotten tenement houses. 3rd. *The habits of the people.* This is proved by the wide variation of the death-rate among different classes in Dublin. Thus the rate for all ages among the upper classes is 13·8 per thousand; children under 5 years, 13·2 per thousand children at that age. Middle class, 27·2; children, 59·8. Artisans, &c, 23·5; the children 72. The very poor, 34·8 general rate; children, 116·9.

There can be no doubt that drunken parents neglect their children in health, kill numbers by over-lying, &c.; but, still worse, they neglect them when ill and thus help to raise the death-rate. This is proved by the proportion of certified and uncertified deaths in Dublin and in London. In Dublin the proportion per cent. of uncertified deaths is, for all ages, 12·3; *under one month*, 53·7; over one month and under a year, 27·1. Total uncertified under one year, 36·6 per cent. In London, all ages, 1·2; under one month, 6·0; over one month and under one year, 1·6. Total under one year, 2·9. If we suppose the doctor is not unnecessarily called on in London, how the population of Dublin, both infants and adults, must be neglected in sickness! Yet the country provides free doctors and free medicine to almost whoever applies.

The Royal Commission of 1884 on the "Housing of the Working Classes," reports favourably on Belfast "as an entirely new town; there are no people living in houses intended for the higher classes—no tenements." Whereas the housing in Cork is bad—"1,732 tenements occupied by 22,000 persons." The tenements in a "disgraceful state;" the overcrowding has existed for 50 years. Houses of the poor in Limerick, Waterford, Dublin—all "disgraceful." But these Commissioners seem to have entirely overlooked the disgraceful system of subletting the small houses in Belfast, which produces perhaps a worse form of overcrowding than could be accomplished in large tenements. Whole families of four, five, or six, or a group of mill-girls equal in numbers, will often sleep in one small room—perhaps an attic—often without a fire-place, or the least means of ventilation; nor do they ever dream of opening windows, at least at night. No wonder typhus keeps smouldering among such houses; no wonder Belfast stands first in the three kingdoms for deaths from typhoid, and, as it exceeds Dublin, probably first in the kingdom for deaths from phthisis. Apart from fevers and far ahead of them, phthisis and chest-diseases are the real destroying angels in Belfast. The flax-working promotes all chest-diseases, but the foul dens of sleeping-rooms are the great cause of both phthisis and the other chest-diseases. Taking the very last month's Report, in the four weeks ending 20th August, 1892, the Registrar-General reported 441 deaths in Belfast. Of these 72 were from zymotic diseases; phthisis, 91; other diseases of chest, 63; making a total of 154 from all chest-diseases. Thus even in the hottest month in the year actually more than one-third, more than one in three, of the total deaths in Belfast was due to chest-disease. Yet Dr. Parkes classes chest-diseases among the "preventable diseases," and everyone now acknowledges foul air to be the great predisposing, and even the exciting, cause of phthisis and chest-diseases. Overcrowding causes typhus when combined with destitution; when less extreme, and not aided by destitution, it causes phthisis and bronchitis as well as reducing vitality generally, and predisposing to all disease. Besides the re-breathed air in the unventilated bedroom, we have sewer-air or sewage-laden air from yards full of pigs where no proper accommodation for them exists, and from unemptied ash-pits, old and leaking sewers, &c. Dr. E. MacDowel Cosgrave declares that sewer-air finds its way into the majority of Dublin houses, and is fruitful of disease. Dr. Playfair says it causes puerperal fevers and illnesses of all kinds, and Dr. Grainger Stewart that it causes albuminuria and Bright's disease.

I think our task is done. We have proved that Irish towns have lagged behind English and Scotch towns in many important matters, and especially in sanitation. In concluding, I have to express my indebtedness to Dr. T. W. Grimshaw, Registrar-General for Ireland, as I have obtained facts and figures from his article in the "Transactions of the Academy of Medicine in Ireland," 1885, p. 382, and his article on "Child Mortality," in the *Dublin Journal of Medical Science*, July, 1889.

ART. XX.—*Should Primary Syphilis and Tubercular Phthisis be added to the notifiable diseases specified in Section VI. of the Infectious Diseases (Notification) Act*, 1889 (52 *&* 53 *Vic., cap.* 72.[a] By NINIAN M'INTIRE FALKINER, B.A., M.B., Univ. Dubl.; Diplomate in State Medicine, Trin. Coll. Dubl.; F.R.C.P.I.

THE subject which I have the honour of laying before you for consideration is not original, and has been over and over again discussed in public; but as no remedial measure has resulted from the discussion, and the want of legislation is almost daily apparent to me in the discharge of my duties in Grand Canal-street Dispensary, I have determined to bring the question of notification of the diseases "pulmonary tuberculosis" and "primary syphilis" briefly before you for discussion; and would further suggest that, if the majority of the members of the Academy here present agree with my view, we should send a recommendation forward to the Council of the Academy, asking them to forward a resolution to that effect to the Local Government Board for Ireland.

With reference first to "pulmonary tuberculosis," the following figures taken from the Registrar-General's reports for five years—

		Phthisis		All other Zymotics
		Ireland	Dublin	
1884	-	10,583	1,424	—
1885	-	10,709	1,426	—
1887	-	10,329	1,422	—
1888	-	9,812	1,274	8,164
1889	-	9,951	1,174	6.884

show that there is a yearly death-rate in Ireland for consumption of about 10,000, of which deaths about 1,200 take place in Dublin, the average yearly death-rate for all other zymotics being about 7,500. These figures show an enormous death-rate for consumption, which, if it is a contagious disease—a view that I hold strongly to myself—we must conclude that the sanitary advisers of the Government of this country have been guilty of neglect in not having long since isolated the victims of the disease, and thus endeavoured to protect the health of the people.

I do not consider that it is the province of this paper to mention in detail my own *too*-frequent experience of these pitiable people, but may mention that within the past week I have twice heard the deadly thud over a consolidated apex; once in a young man twenty years of age, whose father has just died of phthisis, and in whose room he lived; once in a young woman of thirty years with a family of three children.

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[a] Read before the Section of State Medicine in the Royal Academy of Medicine in Ireland, on Friday, May 6, 1892. [For the discussion on this paper, see page 268.]

To meet the requirements of these cases, and to protect the public health, I propose that there should be notification of this disease to the sanitary authority in whose district it occurs by the medical practitioner who sees the case. In addition, I recommend the appointment of a "Public Bacteriologist," to whom the sputum should be sent for examination and report. So far it is easy to proceed, but a difficult question now arises as to removal or isolation of the patient. So long as the individual was able to work or take open air exercise I do not think it would be right to remove him, but it should be insisted that he should occupy a room to himself. But in the class of case that so often comes under my notice, when the victim has succumbed and is lying unable to work or rise from bed in a tenement room, with several other occupiers, I think the law ought to be promptly carried out.

If this were done, I believe that several hundred persons dying of consumption would be removed from the tenement rooms of Dublin; and it is fair to argue, with the removal of the contagious material, that we might hope for a marked diminution of the disease and death that my friend, the Registrar-General, has the painful duty of making public.

In dealing with the question of legislation for the prevention of syphilis, those in favour of doing so have always met with great opposition, and that from a high-minded and religious section of society. This opposition has been so successful that, at the present date in her Majesty's dominions over which the sun never sets, British subjects are exposed by the misguided religious zeal of a certain class to one of the most dangerous and persistent forms of disease. To prove that, from a public health point of view, the present condition of the law is unsatisfactory, I may mention that within the last two months the following cases of primary syphilis have come under my observation:—

1. A, age twenty-two, unmarried, envelope maker, living with her parents.
2. B, age eighteen, unmarried, living as a domestic servant.
3. C, age eighteen, living with her parents.

4. D, age twenty, unmarried, no occupation, living with her brothers and sisters.

5. E, age seventeen, unmarried, primary sore, rash, sore throat, suppurating bubo, housekeeping for her brother.

These cases, occurring in the course of a few months in girls who were not recognised as prostitutes, but living as virtuous members of society, with respectable people, disclose an alarming and insidious danger to the public health of the city. This feeling was riveted on me when I saw the last named of these girls performing her duties as a housekeeper and selecting meat in a butcher's shop—she was evidently hard to please, for she inspected and handled whatever came within her reach.

I may remind the Academy that some years ago the question of the relations of the law to syphilis was a burning one, and that some of the leading members of our profession in Dublin were not afraid to plead for legislative interference to check the spread of the disease, even at the expense of a loss of patients, so strongly and wrongly do some people think on this question. So great was the outcry against the so-called "Legislation for Vice" that the Acts were suspended in all directions, even in the garrison and seaport towns of the empire. I hold that there should be legislation to check the propagation of syphilis and venereal disease, and that two sections should be legislated for—

1. The professional prostitute, who should be under systematic inspection and disinfection by the Public Health Office.

2. Those unfortunate persons who in a moment of weakness have become the victims of a human brute, and who lose not only their virtue but their physical health by his contact.

I would assume that all these persons were innocent, and deal with them kindly and cautiously, so as not to drive them by stringent legislation from the chance of a virtuous and healthy life, and recommend that there should be a ward in each of the Dublin hospitals set apart for the reception of "primary syphilis," in order to keep them apart from the society of the hopelessly irreclaimable inmates of a Lock hospital, and to bring them under the influence of a lady-superintendent, or somebody appointed by her, who would undertake the task of trying to regenerate *a fallen sister.*

The present "want of State control" is, to my mind, a blot on the Government of this country. Few of us who have passed through the vicissitudes of a medical student's career but can appreciate the deadly perils which assail the young men of the city. At every corner he is subjected to the solicitations of a prostitute, who, I believe, is in three cases out of four suffering from disease.

At every military barrack door, as my friend Dr. Harry Thompson assured me, there lie in wait by the score prostitutes of the lowest and filthiest type, who pounce upon the recruits leaving duty and almost force the unhappy boys to their loathsome embrace, and yet our wise and benevolent statesmen know this; they also know how to stop it, and nevertheless are guilty of the daily ruin of hundreds, who get infected with syphilis, and invoke the curses of a future generation.

CASE OF HYPERPYREXIA.

Dr. Alexander, of Coleman (Texas), reports in the *N. Y. Medical Record* a case of "high temperature in an hysterical patient," which is remarkable for the destruction of thermometers and the doctor's faith in his patient. The appearance of the young lady, a school teacher, did not in any way explain a temperature of 110°, at which she kept it for three or four afternoons. In fact, there was nothing the matter with the girl. On the fifth day Dr. Alexander found the mercury at 108°, and in an hour she had got it up to the top of the thermometer—112°. In three minutes more it broke. Another had the same fate. An instrument registering up to 116° also burst in a few minutes. Whether she could have warmed up beyond 116° cannot be known. "Some six or eight physicians saw the case, and all verified the high temperature, although they were very sceptical at first." We are very sceptical still.

EARLY PRACTITIONERS IN KENTUCKY.

Dr. John A. Ouchterlony, A.M., has reprinted from the *American Practitioner and News* his address as President of the Kentucky Medical Society. The title of the brochure is "Pioneer Medical Men and Times in Kentucky." From it we learn that an Irishman, Dr. George Hartt, was the first practising physician, and the founder of regular medicine in the State. He had had an irregular predecessor, one Thomas Walker, married to a cousin of Washington, who compounded electuaries and "a mithridate to make a medicine for mad dogs." Mrs. Frances Coomes, the first female doctor in Kentucky, and probably the first on the American Continent, was known far and wide as physician, surgeon, and obstetrician. Tradition tells that she made the first salt and the first loaf of bread in Kentucky.

PART II.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

A Treatise on Diseases of the Lungs and Pleura. By the late WILSON FOX, M.D., F.R.S., F.R.C.P.; Physician-in-Ordinary to her Majesty the Queen; Physician to his Royal Highness the Duke of Edinburgh; Holme Professor of Clinical Medicine at University College, London; Physician to University College Hospital. Edited by SIDNEY COUPLAND, M.D., F.R.C.P.; Physician to the Middlesex Hospital. London: J. & A. Churchill. 1891. 8vo. Pp. 1,200.

IN glancing through the twelve hundred pages of this "Magnum Opus," we are at a loss which to admire more—the untiring industry and herculean labour of the author, or the pious care bestowed upon the fitting publication of his work by the Editor, Dr. Sidney Coupland. Had Dr. Wilson Fox been less thorough and less conscientious, his Treatise would have seen the light while he yet lived. But it was not so to be. Up to the last he read and noted all contemporary medical literature on the subject-matter of his work, and thus its publication was too long delayed for him to win the crown of his literary labours. When Dr. Wilson Fox died on May 3rd, 1887, the treatise was practically completed, and it is published substantially as its author left it. In his preface the editor explains that he has been scrupulously careful to avoid all excisions of the text and to regard the retention of all the author's opinions as "a sacred duty." At the same time Dr. Coupland has not hesitated to make certain additions which were rendered necessary by recent investigations and discoveries since Dr. Fox's death. As in the case of Murchison's classical monographs on "Fever" and on "Diseases of the Liver," such additions are distinguished by being included within square brackets.

The volume opens with a sympathetic memoir of the author based especially upon references to his life in the presidential address delivered by Sir William Jenner, Bart., at the Royal College of Physicians of London in March, 1888, and also in an extremely faithful and charming sketch of his life-long friend contributed by Dr. Russell Reynolds to the *Lancet* of May 14, 1887.

The work proper is divided into four parts—diseases of the air-passages, diseases of the lungs, diseases of the pleura, and diseases of the mediastinum. It concludes with a "Bibliography" comprising the larger monographs and treatises referred to in the work, and with a full and well-arranged index. But these necessary adjuncts by no means exhaust the bibliographical value of the book, for on nearly every page there are numerous footnotes containing references to the innumerable theses, articles in journals, and abstracts which have been laid under contribution by the accomplished author.

It would be manifestly impossible within the limits of a review to do more than glance at some of the many features of interest in this great work. In the first section on "Diseases of the Air-Passages," after a full description of bronchitis under the headings "acute," "chronic," and "plastic," we find chapters on "Spasmodic Asthma," "Hay Fever," "Whooping-Cough," "Influenza," "Bronchiectasis," "Bronchial Stenosis," and "Foreign Bodies in the Air-passages." The consideration of these topics occupies 145 pages.

"Diseases of the Lungs" next engage attention, and to them about 800 pages are devoted. A mere enumeration of the morbid conditions discussed will show how comprehensive is the scheme of the work. Emphysema, collapse of the lungs, congestion and œdema, brown induration, pulmonary embolism and thrombosis, pulmonary hæmorrhage, acute pneumonia, broncho-pneumonia, hypostatic pneumonia, acute interlobular pneumonia, abscess of the lung, chronic pneumonia, gangrene of the lung, diseases due to inhalation of dust, tuberculosis of the lungs, syphilitic disease of the lungs and bronchi, and hydatids are all described in a masterly way which leaves little to be desired.

By far the most elaborate article in the series is that on phthisis, which takes up more than 400 pages. It will be remembered that in 1873 Dr. Wilson Fox introduced a discussion on the "Anatomical Relations of Pulmonary Phthisis to Tubercle" in the Pathological Society of London. In his masterly exposition of the question, he foreshadowed (as Dr. G. Sims Woodhead observes) that "tuberculosis is a specific infective disease, the result of the action of a specific organism." His views are epitomised in the following sentence, at page 537 of his treatise: "As an hypothetical question, it may be held that, even if tuberculosis depends exclusively on the effect of bacilli introduced into the body, these may owe their power of germination in certain tissues to the weakening of the latter by disease or other causes; and there is evidence that specific contagia may operate on tissues thus weakened." In the preface to the work Dr. Sidney Coupland observes: "The relationship of tubercle to scrofula, to inflammation, the histology of granulations, their varieties and associations, and their anatomical kinship with the diverse forms of induration and infiltration met with in Pulmonary Phthisis—these and other questions, to all of which he personally contributed so much, are most thoroughly dealt with. And the conclusion of the whole is one strong plea for the unity of Phthisis, and the retention of the term 'Tubercular' as the best designation, for he says (page 712), 'whether it be regarded as infective or constitutional, the different appearances of tubercle cannot be classified separately according to arbitrary histological definition; it must, I believe, be regarded as *a disease*, and for this disease a distinctive name is desirable'"—namely, Tuberculosis.

The treatment of phthisis is given at great length, and is fully up to date—for instance, paraldehyde is mentioned as a hypnotic and cough-assuager, and S. West's recommendation of nitrate of pilocarpin as an anhidrotic is quoted. In a work singularly free from misprints it is a pity to find Milner Fothergill's erroneous term "antihydrotics," for "antihidrotics," reproduced.

Next to Tuberculosis, pneumonia receives most attention at the author's hands. Nothing can be better than the monograph on "Acute Pneumonia," which runs through 143 pages of the book. Full justice is done to the pythogenic, epidemic, and microbic origins of the malady. "The evidence that pneumonia can arise under 'pythogenic' influences is varied and convincing. The fact has been especially insisted upon by Grimshaw and Moore, who have adduced several cases in support of this view, which had been previously enunciated with such striking proof by Sir W. Jenner" (page 265). Our own clinical experience leads us to a thorough belief in the pythogenic origin of many cases of acute pneumonia, and we are also prepared to endorse the author's views as to the relations of this disease to erysipelas. On this point he remarks (page 251): "Pneumonia is occasionally observed in cases of erysipelas. In some cases it appears to be due to secondary blood-poisoning, and to assume the disseminated form of pyæmic pneumonia. In other instances, however, it appears to be rather of the nature of an intercurrent phenomenon, and approximates more or less closely in its characters to those of the acute primary disease; and it appears not improbable that the pneumonia may, under these circumstances, originate from the same blood-poison as that which gives rise to the erysipelas. It has also been observed to arise by a propagation of the inflammatory action from the skin, extending through the mouth, fauces, and air-passages to the lung tissue."

The relations of acute pneumonia to enteric fever are very curtly dismissed in a few words, but to our mind those relations are at least as close as those which exist between erysipelas and pneumonia, of which we have just been writing. Evidence is daily accumulating to show that the poison of enteric fever may enter the body by the lungs, and that the brunt of the disease may fall upon those organs rather than upon the intestinal and mesenteric glands. We are quite with the author, however, when he states that "in typhoid fever especially the pneumonia tends occasionally to assume the lobular and vesicular forms of the disease" (page 251).

The sections on treatment, both of phthisis and pneumonia, are excellent. Dr. Fox speaks highly of the utility of the cold bath in the latter disease; but his practice was eclectic and philosophical, and he judged each case on its own merits, as every physician is bound to do in the interest of his patient. The first remedy mentioned for phthisis is "Tuberculin (Koch)," but of course it is to the editor, Dr. Coupland, that we are indebted for the full account of Koch's treatment given at pages 866–868, inclusive. "It is much to be regretted," says Dr. Coupland, "that circumstances prevented this cautious observer from silently pursuing his investigations until he felt himself in a position to speak more definitely upon the subject." He adds: "There seems to have been almost as much unwisdom in rejecting the use of tuberculin altogether as there was in the hasty acceptance of the idea that it was a panacea for tubercular disease in all forms and stages." Having alluded to W. Hunter's analysis of tuberculin (*Brit. Med. Journal*, July 25, 1891), Dr. Coupland expresses the opinion that the therapeutic value of tuberculin will in the future probably rest upon the separation of those constituents which seem to be the really active elements in tubercular disintegration from those which have merely a pyrogenic, and therefore a hurtful, action. He considers that their separation may lead to continued trials of the remedy in phthisis.

One notable omission in the therapeusis of tuberculosis we notice with regret, and that is the author's silence as to the great value of chloride of calcium administered in combination with strychnin and arsenic. Such a combination possesses a marvellous palliative and even curative power. Quite recently also Dr. A. E. Wright has drawn attention to chloride of calcium as a remedy of the first importance in hæmoptysis (*Brit. Med. Journ.*, December 19th, 1891).

In the symptomatology of tubercular phthisis only slight mention is made of the head-symptoms of the later stages of the disease. Not once nor twice, however, in our experience, very serious head-symptoms and even mental derangement have complicated advanced pulmonary phthisis—as we write, a woman is under our care in hospital, who was sent in under the impression that her mind was becoming unhinged. She is in the last stage of phthisis, with extensive excavation, profuse muco-purulent expectoration, hacking cough, sleeplessness, and lividity of the face and lips. As bearing upon such a case as this, we may quote Dr. Fox's words: "Acute mania may, however, appear in the terminal stages of phthisis."

The last sections of the volume treat of diseases of the pleura and of the mediastinum respectively. The morbid conditions of the pleura are—pleurisy, hydrothorax, hæmothorax, and pneumothorax. Under the last heading the editor adds a good account of the lesion to which Leyden, of Berlin, in 1879, gave the name of "pyo-pneumothorax subphrenicus." It consists in the formation of "an abscess beneath the diaphragm, which, owing to its origin to perforation of the stomach or intestine, contains more or less gas as well as pus."

Diseases of the Mediastinum are described under the headings: "Intrathoracic Tumours" and "Inflammation of the Mediastinum." Both topics are discussed with the scholarly ability which distinguishes the author.

In concluding this notice, we make bold to say that no other such work as this on the Diseases of the Chest has ever been penned.

It is a comprehensive and masterly treatise, which will shed a fresh—although, unhappily, a posthumous—lustre upon the name of Wilson Fox.

Dictionary of Psychological Medicine. By D. HACK TUKE, M.D., LL.D. 2 Vols. London: J. & A. Churchill. 1892.

YET another work from the pen of our veteran psychologist, and this time one which, from its practical utility and extent of information concisely put, is sure to find a place on the bookshelves, not only of the physician specially concerned with mental diseases, but on those of the general practitioner, who in its pages can find what he needs, and so arranged that as he runs he can read. This is the age for terse and pithy writing, and to meet this want we have to-day dictionaries in medicine and surgery compiled from articles by the foremost authorities on the subjects with which they deal.

Dr. Hack Tuke has designed his present book to supply this want in the field of medico-psychological literature. He has enlisted a host of co-workers, who have supplied him with material ready to hand, from which he has built up a work which will be a lasting monument to his energy, patience, and literary skill. The book, which opens with a historical sketch of the insane, followed by a succinct article on the philosophy of mind, is a really good and useful one, not to be taken up and merely glanced through, but to be used as a dictionary should be—as a ready reference when in doubt on a point, or when in search of special information on some little known subject. The range of matters treated of is wide and comprehensive, including the "Definition, Etymology, and Synonyms of the Terms used in Medical Psychology, with the Symptoms, Treatment, and Pathology of Insanity, together with an abstract of the Law of Lunacy in Great Britain and Ireland." That the most important subjects dealt with are ably and fully treated of will be acknowledged when we find attached to them the names of such men as Charcot, Benjamin Ball, Benedikt, T. S. Clouston, Sir Andrew Clark, Fielding Blandford, Bevan Lewis, Pliny Earle, and many others equally well known. It would be impossible in the limits of a brief review to enter into any details regarding a work of this kind: it does not admit of elaborate analysis. Suffice it to say that each article bears the impress of its author's experience and knowledge, and may be safely relied upon as presenting, in a convenient form, the most recent information. Dr. Tuke's editorial work has been, as usual, performed in a most thorough and conscientious manner. To him its inception and carrying out has been clearly a labour of love, and, without in the smallest way detracting from the merits of his other recent works, we may express an opinion that this more than any of them will fulfil its object, and supply a need felt by many.

The "A. B. C. Medical Diary and Visiting List" for 1893. London.

THIS valuable "Annual" is now ready. It is of the same size as last year's edition, and contains—space for recording visits to either 56 or 112 patients, according to the requirements of the physician; pages for cash account, obstetric engagements, vaccination engagements, engagements under the Factory Act, memoranda, &c. With the Diary is bound on thin-toned paper the "Excerpta Therapeutica," which contains the very latest information in therapeutics, culled from most recent editions of works on the subject, English and Foreign Medical Journals, &c., the authorities being quoted in each case.

The Diary is supplied by Messrs. Burroughs, Wellcome & Co., of Snow Hill Buildings, London, E.C., bound in silk or in leather tuck at half-a-crown. Bound in silk with a morocco or pigskin wallet, the Diary costs four shillings; and in silk cover, with Russia leather or velvet-pile wallet, the price is five shillings.

The Disinfection of Scarlet Fever and other Infectious Diseases by Antiseptic Inunction. By J. B. CURGENVEN, M.R.C.S., L.S A.; formerly House Surgeon to the Royal Free Hospital, &c. Read at a Meeting of the International Congress of Hygiene and Demography, London, 1891. London: H. K. Lewis. 1891. Pp. 25.

DR. CURGENVEN has for a long time endeavoured to prevent the dissemination of the infection of scarlatina by means of inunction of antiseptics. He has got best results from Tucker's eucalyptus disinfectant. His procedure in scarlatina is "to smear over the whole surface of the body lightly with the oils night and morning for three days, not omitting the skin behind the ears, and in other positions that might be overlooked. After the third day the skin is anointed only at night after a warm bath for seven days, when this treatment ceases, and the patient joins the rest of the family." "Children restless and sleepless with fever go to sleep soon after the inunction; temperature drops three or four degrees and the pulse becomes less rapid. The oils rapidly evaporate from the warm skin of the patient, and fill the air around to saturation with their vapour. This, inhaled with every breath, disinfects the mucous surfaces, penetrates to the farthest vesicles of the lungs, is absorbed into the blood, and acts directly on the poison throughout the body. Absorption also takes place from the skin, and the oils are then brought in direct contact with the poison which is deposited in the intercellular spaces of the cuticle. An emulsion of the oil should be administered, and the throat brushed with the disinfectant, but this is not essential."

In this way Dr. Curgenven cuts short the attack. To confirm his statements he gives extracts from the letters of a number of doctors and others, who bear witness to the efficacy of the treatment.

In an appendix the author advocates eucalyptus oil in dipththeria, measles, chicken-pox, and whooping-cough.

Truly this method gives wonderful results, according to Dr. Curgenven.

Saint Thomas's Hospital Reports. New Series. Edited by Dr. Hadden and Mr. Anderson. Vol. XX. London: J. & A. Churchill. 1892. Pp. 484.

Th isvolume of Reports is quite equal in value to those that have preceded it, and is good evidence of the valuable and careful work that is being done by the staff of St. Thomas's Hospital and by the other medical men connected with it.

In this volume the longest, and perhaps the most important, paper is that by Dr. Payne on "Specific Diseases, considered with reference to the laws of Parasitism." It represents the diseases from the parasite's point of view, and explains, more or less successfully, many features of disease as being factors which tend to promote the continuance or propagation of the parasitic species. It will well repay perusal. Another important paper is one by H. P. Hawkins, M.B., on "Tubercular Peritonitis." By analysing the histories of a large number of patients affected with this disease, he comes to the conclusion that under ordinary medical treatment a large proportion of cases recovered, and that operative interference slightly increases the number of cures, the *rationale* of the usefulness of abdominal section being that by this means ascitic fluid can be more perfectly removed than by tapping. The whole tendency of the paper is to make us look on the disease in a more hopeful light than heretofore. Other important papers are—"The Treatment of Compound Fractures of the Long Bones," by Messrs. Makins and Abbott; "Pelvic Cellulitis," by Dr. H. Simpson; and "Cardiac Symptoms in Cases of Gastric Ulcer," by Dr. Ord.

Mr. Lake's Report of the Aural Department is illustrated by a coloured plate, figuring fifteen cases of disease of the drum of the ear.

The editors are much to be congratulated on the success of their work.

Atlas of Clinical Medicine. By BYROM BRAMWELL, M.D., F.R.C.P. Edin., F.R.S. Edin.; Assistant Physician to the Edinburgh Royal Infirmary, &c. Vol. II., Part 1. Edinburgh: T. & A. Constable. 1892. Folio. Pp. 44.

WE welcome the first part of the second volume of this splendid work. Its contents are—An article on "Scrofula," with two illustrations; a short note on two remarkable cases of unilateral hypertrophy of the skull, which had been recorded and figured by Mr. Jonathan Hutchinson and by Dr. Alexis Thomson respectively; a monograph on "Measles;" a note on two cases of Friedreich's ataxia, in which the knee-jerks are not lost; and a long treatise on alterations in the fields of vision, their clinical significance and importance, with illustrative cases.

In addition to eight plates, which illustrate the above-mentioned papers, a series of perimeter charts and a drawing of secondary syphilis as it affects the skin are issued with this Part. The perimeter charts show the fields of vision both for white and for colours in cases of central amblyopia (? tobacco amblyopia) and lead poisoning. One of the drawings of measles is reproduced from Willan and Bateman's "Delineations of Cutaneous Diseases," published in 1806. The other drawing is original. It scarcely does justice to the subject, for the characteristic swelling of the face is not pourtrayed. In the text, this point is well brought out, for the author writes (page 12)—"When the rash is copious, the eyes, face, sometimes also the hands, are considerably swollen when the rash is fully developed."

The remaining two fasciculi of the second volume of the "Atlas of Clinical Medicine," are announced to appear on January 1 and May 1, 1893.

Practical Sanitation: a Hand-book for Sanitary Inspectors and others interested in Sanitation. By George Reid, M.D., D.P.H.; Fellow and Examiner of the Sanitary Institute of Great Britain; Medical Officer, Staffordshire County Council, &c. With an Appendix on Sanitary Law by Herbert Manley, M.A., M.B., D.P.H.; Medical Officer of Health to the County Borough of West Bromwich. With numerous diagrams. London: C. Griffin & Co. 1892. Pp. 300.

In the autumn of 1890 Dr. Reid delivered a course of lectures on Sanitation in Stafford, under the auspices of the County Council, which were attended by sanitary inspectors, members of local authorities, builders, plumbers, and others interested in the subject. Finding there did not exist any book on sanitation exactly suitable for those to whom he had been lecturing, and having been requested to publish his lectures, Dr. Reid compiled the work before us. It is not, therefore, exactly comparable to the numerous works on hygiene which have been written during the last few years, especially for medical men. In this book purely medical subjects are, perhaps, rather less touched on, and, on the other hand much more attention is devoted to technical details—plumbing, house-construction, sanitary and insanitary work and appliances, and such subjects. From beginning to end it is a work of the highest value, and is calculated to do a vast amount of good service in advancing the cause of sanitation.

The subjects treated of in this work are those which we find in every work on hygiene—air, water, disposal of refuse, &c. What gives to this book its peculiar excellence is not novelty of subject, but the thorough and practical way in which each subject is explained and discussed, and the number and quality of the diagrams with which it is illustrated. These features are especially marked in the sections treating of mechanical works, such as house-construction, plumbing details, arrangements for warming, and similar subjects. A good many of the diagrams illustrate defective work, and point out typical and frequently occurring faults.

The subjects of Disinfection and Food are treated from the point of view of the sanitary inspector. The directions given are clear and concise, such as no one could mistake or become confused about, and matters which are not clearly settled, or are merely of theoretical interest, are for the most part omitted. Still, the natural history of infections diseases, as far as it is known, is admirably given. As an instance of the completeness of this book, we may mention that all Dr. Thorne's conclusions as to diphtheria, lately published in the "Milroy Lectures," are introduced. Full directions are given as to judging if meat, fish, &c., is sound, or unfit for use.

The Appendix, by Dr. H. Manley, which occupies 55 pages, contains a summary of the principal Acts of Parliament and Local Government Board orders and memoranda which concern inspectors of nuisances. The more important sections of the Acts are printed in full; other sections are merely alluded to and their intention and scope mentioned.

We regard Dr. Reid's work as a most valuable one, and we believe that not only those inspectors and others for whom it was in the first instance written, but also the medical profession and the general public will derive much benefit from its study.

Reasons why the Office of Coroner should be held by a Member of the Medical Profession. By Frederick W. Lowndes, M.R.C.S. Eng. London: J. & A. Churchill. 1892. Pp. 34.

This is an able and temperate statement of the arguments in favour of appointing medical men as coroners. It contains a large number of examples, drawn from *causes célèbres*, of questions which have arisen where the medical training of the coroner, and not his legal knowledge, has been of service. Most medical men could supplement these by other instances drawn from their own experience, where either the medical knowledge of the coroner has helped to clear up difficulties and ascertain the truth, or where his ignorance of medical science has, in spite of his legal knowledge, resulted in absurd verdicts. Within the past month two cases of poisoning, arising from the careless traffic in drugs, resulted in verdicts respectively of "death from natural causes" and "misadventure." In one of these cases a chemist prescribed aromatic sulphuric acid and tincture of capsicum for a child suffering from peritonitis, in the other 60 grains of morphin were sold to a law student who wished to commit suicide.

Mr. Lowndes gives a list of the medical coroners of England and Wales, and the following interesting summary of their professions:—

CORONERS OF ENGLAND AND WALES.

Total number		331
Number of those whose qualifications are known—		
Legal qualification	247	
Medical „	51	
		298

We hope that Mr. Lowndes' pamphlet will do something towards increasing the number of medical coroners. The object of a coroner's investigation is not primarily to sift evidence of crime—that belongs to magisterial investigation afterwards—but to find out the cause of death. "Coroners' quests" are at present too often open farces. "Found dead," "natural causes," and such like, are not causes of death, and "apoplexy," "heart disease," and so forth, if depending upon the speculations of intelligent policemen and knowledgable old women, are worthless. A medical coroner knows that the cause of death can generally be verified, and he knows when a *post-mortem* examination is sufficient or when portions of the body should be sent to the analyst. If Mr. Lowndes' recommendations are acted on the number of farcical verdicts such as the above will rapidly be reduced. Mr. Lowndes deserves the thanks of the profession for his timely and able brochure.

Transactions of the Pathological Society of Manchester for the Session 1891–92. Edited by T. N. KELYNACK, M.B. Vol. I. Manchester: John Heywood. Pp. 162.

THE Manchester Pathological Society, although it has existed and flourished for a number of years, only decided in 1891 to publish its transactions. Of this decision the volume before us is the fruit, and its high standard of excellence amply justifies its conception. The society held eight meetings, at which seventy-six communications were made or specimens shown. From the large number of specimens and communications (an average of 9·5 per meeting), it would appear that the members are more anxious to see and learn than to make speeches.

In the "Transactions" most of the papers are printed in the form of more or less concise abstracts; a few are published at full length. Among these we must especially refer to Dr. Brooke's paper on Epithelioma Adenoides Cysticum (Hydradenoma), in which he gives a very full account of the naked-eye and microscopic appearances of these curious growths, and illustrates his paper by excellent drawings. Dr. Brooke leans to the view that these tumours are embryonic in nature, and are not connected with the sweat glands. As well as this, there are many other admirable papers in this collection.

We can warmly congratulate the Manchester Pathological Society, and especially the editor, Dr. Kelynack, on the excellence of the first volume of "Transactions," and we feel confident that succeeding volumes will attain the same high standard.

An Introduction to Modern Therapeutics: being the Croonian Lectures on the Relationship between Chemical Structure and Physiological Action in relation to the Prevention, Control, and Cure of Disease. By T. LAUDER BRUNTON, M.D., D.Sc. Edin., F.R.C.P., F.R.S., &c.; Assistant Physician and Lecturer on Materia Medica and Therapeutics at St. Bartholomew's Hospital. London: Macmillan & Co. 1892. Pp. 195.

THESE lectures were delivered in June, 1889, and, being printed in the Medical Journals of that day, were widely read and valued. They are now published in a more permanent form, the only change being that some additional woodcuts have been inserted. Dr. Brunton states in his preface that the chief reason for this delay in publication was his intention to have extended the lectures so as to include the action of drugs on the function of the kidney and other organs. It is greatly to be regretted that the author did not find the time at his disposal sufficient to enable him to carry out his intention. We hope, however, that before long he may be able to complete his work as he intended.

These lectures are very well worth reading: we do not know any writer on Therapeutics who can write on obscure chemical points and on the action of drugs on the organism in such a clear and lucid style as Dr. Brunton. Almost every chemical substance mentioned is explained by constitutional as well as empirical formulæ, whereby the relation between various bodies is made evident at a glance. Another feature which makes this volume most attractive is the author's power of illustrating his subject by means of a simile drawn from the most commonplace matters. We cannot pass over these similes without reproducing one of them:—

> "A plate or a tumbler can hardly be called dangerous, but when broken or splintered the fragments may cut or pierce, and inflict serious or even fatal injuries. If the fragments are large they can easily be cemented into a whole utensil, and thus be deprived of their injurious character. In like manner albumoses and peptones are built up into non-poisonous albuminous substances in the blood and portal vein. If the splinters are smaller it will be difficult or impossible to do this; and the ptomaines or alkaloidal substances resulting from the decomposition of albumen may not undergo synthesis in the portal system, but pass through the liver and act as poisons in the general circulation. But if we break these splinters by pounding them into fine dust, we may again make them almost completely harmless, and in the same way the final products of albuminous decomposition, ammonia and carbonic acid, have but very slight poisonous action, and only kill when used in very large quantities; while the ptomaines, which may be likened to the splinters, are very deadly."

We warmly commend these admirable lectures to the careful consideration of our readers.

Alcohol and Public Health. By J. JAMES RIDGE, M.D. London: H. K. Lewis. 1892. Pp. 91.

DR. RIDGE has tried to collect in a small space the various considerations which point to abstinence from alcohol being physiologically right. Many of the facts he quotes, although well established, are not as widely known as they deserve to be, and he shows how modern research has upset many cherished convictions.

It is now generally admitted that alcohol lowers the temperature, and has but little food value; its stimulant effects are still, however, widely believed in, and probably the most generally interesting part of Dr. Ridge's book is that in which he shows how from the first the action of alcohol is narcotic. Dr. Ridge has personally extended Kràpelin's historic research to all the special senses, and has always found narcotism and not stimulation.

The effect of alcohol in small quantities on the duration of life is also dealt with, and the action of Life Offices which take abstainers at reduced rates is justified.

This is a timely and readable little book.

PART III.

SPECIAL REPORTS.

REPORT ON NERVOUS AND MENTAL DISEASE.[a]

By Ringrose Atkins, M.A., M.D.; Resident Medical Superintendent, District Lunatic Asylum, Waterford.

I. INSANITY IN GENERAL.

Insanity following Influenza.—Prof. Kirn, of Freiburg (*Allgemeine Zeitschr. f. Psych.*), has arrived at the conclusion that influenza is a more frequent exciting cause of insanity than any other febrile affection; he has collected fifty-four instances, observed by himself or other physicians. Nervous symptoms are prominent in ordinary cases of influenza. These are headache, sleeplessness, pains in the limbs, and neuralgia—often implicating the trigeminus—and great prostration of strength. Dr. Kirn classifies the cases which pass into insanity under two heads—1. Where delirium occurs during the febrile condition of influenza; this frequently accompanies pneumonia. There are delusions and hallucinations, strange dreams, shouting of a joyous character, or howlings and lamentations. In one case, a boy of seven years, the influenza commenced with mental aberration, the child wandering away without knowing where he was going. Patients affected with delirium during the course of the influenza, were rarely found to have any hereditary predisposition to insanity. The patient generally recovered from the mental derangement in a few weeks. In the second or post-febrile form, Dr. Kirn had the details of thirty-nine cases. The insanity generally appeared in from four to eight days after the cessation of the fever; in two it came on as late as three weeks after. From the clinical symptoms he divides them into three forms, characterised by the conditions of mental exhaustion, melancholia, and mania. The exhaustion is of the same character as those cases in which the constitution of the patient has been reduced by fevers, or the puerperal state. There is excitement suddenly appearing, with confusion of the senses, and a tendency to depression, with delusions of a dismal character. If the delirium become higher there are delusions of the senses, rapid changes of mood, and tormenting thoughts. The bodily condition is one of weakness and anæmia; recovery generally sets in in from three to six weeks. The second or melancholic form is the commonest; Dr. Kirn collected twenty-two cases. It seems a kind of exaggeration of the depression and disquiet of the ordinary convalescence from influenza. Sleeplessness is the first striking symptom, then discontent, with reproaches against the attendants and distrust and suspicion against the physician. The patient is hypochondriac, or fears ruin, loss of money, or loss of honour; and occasionally there are attempts at suicide, frightful hallucinations, painful delusions, and refusal of food. The prognosis is good; recovery, as a rule, takes place in six or eight weeks, though it is sometimes delayed for several months. Dr. Kirn studied six cases of mania following influenza; they presented the symptoms of simple typical mania, without hallucinations and without delusions. The delirium generally commenced about a week after the invasion of the influenza; recovery generally supervened in from six to eight weeks. Dr. Kirn holds that the toxic matter of the influenza has an injurious effect upon the whole nervous system, and that it acts most powerfully upon those who have an hereditary tendency to insanity. He found that 54 per cent. of those who became insane laboured under this predisposition.

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[a] The author of this Report, desirous that no contribution to the subject of Nervous and Mental Disease should remain unnoticed, will be glad to receive any publications which treat of it. If sent to the correspondents of the Journal they will be forwarded.

Dr. Schunitz, in a paper on "Insanity after Influenza," gives his conclusion that influenza is mainly an epidemic nervous disease.—(*Journ. Ment. Sci.*)

Dr. G. H. Savage contributed to the Medical Society of London, in November of last year, a paper on the same subject. In summarising he quoted Dr. Leledy, Interne of the Asylum at Bourges, as follows:—

1. Influenza, like other fevers, might set up psychopathy. 2. Insanity might come on at various periods of the disease. 3. It might start any form of insanity. 4. No specific symptoms resulted from it. 5. The *rôle* of the influenza varied in the production of the insanity. 6. It might be the predisposing or the exciting cause. 7. In all cases there was some acquired, or inherited predisposition. 8. The insanity followed from altered brain nutrition, possibly toxic. 9. The onset of insanity was often

sudden, and bore no relationship to the severity of the influenza. 10. The curability depended on general, rather than special conditions. 11. The insane were less disposed to take influenza than the sane. 12. It had cured psychoses in rare instances. 13. The insane might have mental remission during the influenza. 14. There was no special indication in the treatment. 15. Influenza might lead to crimes and medico-legal issues.—(*Lancet.*)

Paranoia.—Dr. C. H. Hughes, of St. Louis, in his "Report on the Progress of Neurology and Psychiatry" (*Alienist and Neurologist*) says that—"Paranoia, one of the newest terms in alienism, appears to have secured a permanent footing in psychiatry as expressive of a distinctive form of insanity natural to the individual and always abiding with him, as contradistinguished from those more common forms which come to the individual with a pathological change of character. The literature," he adds, "continues confirmatory of the claims of this form of mental aberration to a permanent place in clinical psychiatry."

Relation of some Forms of Acute Insanity to Paranoia.—Rosenbach (*Annal. Med. Psych.*) discusses the propriety of the term "acute paranoia," applied by Westphal to the condition characterised by other authors as *primäres acutes Delir, hallucinatonische Verrückttheit, hallucinatonische Wahnsinn, delire d'emblée,* delusional stupor—the prominent symptoms of which are the sudden outbreaks of hallucinations and delusions in great variety, usually combined with motor excitement and complete confusion of ideas. The patients generally recover, and in the contrary case pass into a condition of mental enfeeblement without systematised delusions. On this account he objects to classify it with chronic paranoia; he considers it a psychoneurosis, and proposes the name "folie générale." The histories of seven cases are cited; hereditary predisposition was present in most. Excesses of various sorts, anæmia, fever, and the puerperal state, figured as exciting causes. In all the disease began suddenly with numerous delusions of persecutory, hypochondriacal or melancholic character, without any consistency, and with complete mental confusion. Most of the cases recovered.

Paranoia from the Clinical Standpoint.—Dr. C. Neisser, Assistant Physician at Leubus, maintains, in a paper read at the meeting of the Association of East German Alienists, December 5, 1891, that the fundamental symptom of paranoia is neither the delusions nor the hallucinations, but what he calls "morbid self-reference"

(*Krankhafter Eigenbeziehung*), or the disposition on the part of the patients to imagine that everything has some mysterious reference to themselves. This symptom, he thinks, is never wanting in the earlier stages of the affection, and in some cases may for a long time be the only noticeable departure from a healthy mental condition. In view of the fact that the intelligence of the patients in matters not connected with their delusions often seems entirely intact, he is disposed to favour the hypothesis that this morbid self-reference may have a local origin, and instances the suggestion of Meynert—that irritative conditions in the medulla oblongata may cause hypochondriacal feelings, and thus keep the attention of the patient constantly fixed upon himself. The hallucinations he is disposed to regard as due to local irritation of sensory areas in the cortex.

At the recent meeting of the British Medical Association at Nottingham Dr. E. L. Dunn read a paper on "Paranoia and its Relationships." He discussed the various phases and symptoms of the disorder, and gave his views with regard to secondary paranoia, in which a small group of delusions might remain and become systematised, as the outcome of a previous acute psychoneurosis. The symptoms in these cases were generally of the melancholic type. In the discussion which followed Dr. Hack Tuke rather objected to the introduction of the term paranoia, considering that the expression "Systematised Delusional Insanity" sufficed to define the larger number of cases, while if delusions of persecution were present, the term could be qualified accordingly. Dr. Mickle divided paranoia into two great divisions—the depressed and the expansive—and subdivided the former into the persecutory, the hypochondriacal, and querulous; and the latter into the ambitious, the religious, and the erotic. All cases of paronoia, he considered, do not belong to the great group of hereditary degenerates. Dr. Bevan Lewis, with Dr. Tuke, disliked the term paranoia, doubting if the mutual cohesion of the branches was sufficient to justify its elevation to the dignity of a special morbid entity. He maintained that what was termed paranoia is simple delusional insanity engrafted on a psychopathic basis. Dr. Dunn, in reply to the opinions expressed, acknowledged that there was in England a prejudice against the term paranoia, for which, doubtless, there were good grounds. Still he thought that these cases were well worthy of separation from others for the purpose of clinical teaching, prognosis, and cure.

Disturbances of Mental Processes in Paranoia.—Ziehen, at the meeting of naturalists at Halle, called attention to certain points which he considered to have been neglected in the current accounts of this form of insanity. Attention hitherto has been mainly concentrated on the delusions and hallucinations which have been considered to be the only important symptom of paranoia. The author found, in addition to these, there might be a primary acceleration, a primary retardation, or a primary incoherence in the sequence of the mental processes. There are frequent intercurrent symptoms in all forms of paranoia, especially in the acute forms. Apart from the intercurrent appearance of these symptoms, there were cases in which either of them might be the dominating symptom. The incoherent form of paranoia has usually been classed and described as hallucinatory, confusional insanity—Meynert calls it amentia. The incoherence has been generally thought to be dependent on hallucinations, but the author finds that it is often a primary symptom. The outbreak of incoherent paranoia is apt to be sudden; secondary dementia is rather rare; recovery may take place after a year or more. In a quarter of the cases death occurs from intercurrent symptoms. Febrile conditions are common, such as have been described as acute delirium, the existence of which as an independent form of disease the author questioned. He does not insist on classifying the hallucinatory and incoherent forms with the ordinary simple paranoia—the two former have more in common than they have with the latter. He, however, finds it most satisfactory to class under this title those psychoses distinguished by an alteration of the intellectual processes, which may take either of three directions—primary delusions, hallucinations, or incoherence.—(*Am. Journal of Insanity.*)

Ideas of Personal Importance in Subjects of Delusions of Persecution.—Dr. Christian, Physician to the Asylum at Charenton, has an article on this subject in the *Arch. de Neurologie.* After a summary of the history of the subject, and after drawing a distinction between those cases in which delusions of persecution are merely incidents, and those in which they are the essential and fundamental characteristic of the mental derangement—to which latter class he confines his use of the term *persécutés*—he goes on to discuss the frequent occurrence of delusions of personal importance in this class, and to separate them with reference to this point into four varieties:—

(*a.*) Sometimes the extravagant delusions become predominant, constituting a real megalomania.

(*b.*) Sometimes they appear only in an incidental accessory manner.

(*c.*) In many patients they are present, not as an organised megalomania, but as indefinite ideas of vanity-infatuation, inordinate self-esteem.

(*d.*) Finally, many subjects of the insanity of persecution have no extravagant delusions, and do not seem susceptible to them. This last class is composed largely of those in whom the delusions of persecution have reference to the genital organs, who, in his experience, rarely develop delusions of personal importance. These various points are illustrated by notes of twenty-seven cases. The author takes strong ground against those who affirm that this association is an invariable one, although he is satisfied, contrary to his former opinion, that it exists in the great majority of cases.—(*Am. Journ. of Insanity.*)

II. NEURO-ANATOMY AND PHYSIOLOGY.

A New Method of Determining the Relation of the Cerebral Convolutions and Fissures to the Outer Surface of the Scalp.—Dr. Winkler, in a long article published in the *Nederlander Tijdschrift voor Geneeskunde,* July 16th, 1892, demonstrates the possibility of more accurately determining the localisation of the different cerebral convolutions and fissures. His method is an elaboration of that proposed by Müller, who first divided each cranial hemisphere into areas having a mental relationship to each other. For this purpose he took two fixed points—the glabella, or smooth prominence on the frontal bone just above the root of the nose, and the external occipital protuberance, and joined these by two lines, one over the arch of the skull, and another running in a horizontal direction. Each line he divided into ten equal portions, and united the corresponding points of the superior and inferior lines. Each division of the skull thus formed was divided into sections, and each of these trephined; the circular portion of the brain thus exposed was marked with some colouring material, and the topography of the convolutions was thus simply obtained. Frazer adopted the same plan, taking the most prominent portion of the occiput as one fixed point, and the glabella as the other, dividing his base lines into eight sections, and subdividing these once more, and employing photography for the recognition of the different cerebral landmarks. He showed that in fifty photographs the same convolutions were constantly to be found in the same sections and sub-sections. It was thus proved to be possible to find the various portions of the cerebrum by other means than by the somewhat uncertain method of taking the cranial sutures as fixed points. Winkler claims for his own process that it is far more accurate than that either of Müller or of Frazer. Taking his fixed points at the glabella and occipital protuberance he shows, as Müller does, a sagittal passing over the cranial dome, and a horizontal passing round the base of the skull on one side. Each of these base lines he divides into four parts. The corresponding and opposite dividing points of these base lines are united, and the uniting lines bisected; these bisecting points are again united to each other, to the glabella point, the occipital point, and the four dividing points of the base lines, by straight lines. In this manner we obtain four triangles, and four quadrilateral figures—the latter are divided by diagonals into triangles, and each cranial hemisphere is thus divided into twenty triangles. By a series of experiments, details of which cannot be entered into here, he shows that within and subjacent to the spaces occupied by these triangles certain definite portions of brain substance can be constantly found to lie. Slight variations necessarily occur in the exact topography of each triangular space, but these are provided for in the diagrams which accompany the article, and it appears simple from these to find any one of the cerebral convolutions or fissures. The only parts of the brain which cannot be said to bear a truly constant relation to the superficial triangles are the portions of the occipital lobes. Winkler in his experiments found that by taking the occipital protuberance as his fixed point, his transfixing pin for determining the underlying structures almost always penetrated the superior longitudinal sinus, and he considers Frazer's fixed point for this reason only as preferable to his own. The sutural lines which have hitherto been accepted as fixed points from which the underlying structures could be measured and determined, are shown by him to vary to such a degree that it is difficult to understand how their constant location could have been believed in so long. Winkler's topography has beeen practically verified by Professors Kortweg and Van Sterson, and Dr. Guldenarm.—(*Journal Mental Science.*)

New Reflexes.--Dr. C. H. Hughes, of St. Louis (*Alienist and Neurologist*), and M. Onanoff (*Trans. Soc. de Biologie*) have described two new reflexes, to which they believe attention has not been previously called. Dr. Hughes terms that which he describes the *virile reflex*, and thus details the method of eliciting it:—"If you take a perfectly healthy individual whose spinal cord is entirely normal, especially in its genito-spinal centre, and place him on a couch without head rest, supine, and nude about the loins, and make the sheath of the penis tense by clasping the foreskin with the left index finger and thumb, at about the place of the frænum, and pulling it firmly towards the umbilicus, placing the middle ring and little finger low down upon the dorsum of the virile organ for perceptive purposes, and then sharply percuss the sides or dorsum of the penis, near the perineal extremity, a quick and very sensible reflex motor response or retraction of the bulbo-cavernous portion will be felt to result from this percussional impression, like that which follows, though less pronounced in the testicles after sensory irritation of the inner aspect of the thighs, and known as the cremasteric reflex. The reflex jerk is always away from the irritating impulse, though it is down towards the perinæum in the penis reflex, while it is upwards in both the cremasteric and patellar tendon phenomena." "This reflex symptom," Dr. Hughes considers. "to be of important physiological and clinical significance. Its full value for diagnostic and prognostic purposes has yet to be determined by further investigation than he has yet been able to give to it." But—he adds—"he has learned enough to confidently commend it to neurological clinicians. He terms it the 'virile reflex,' because it seems to be actively present in all healthy adult males with normal spinal cords, whom he has examined, and absent in infants and the feeble, and in male children who have not attained the age of puberty. A number of years ago Dr. Hughes ventured the assertion that the absence of the cremasteric reflex would be found of significance in the determination of impaired virility from sexual excess and masturbation. This subsequent experience has confirmed. Now this new sign—the penis percussion reflex—present, impaired, or absent, gives another valuable evidence of the vigour, impairment, loss or abeyance of the sexual powers in man. After prolonged sexual excess it becomes impaired or disappears, to return again with sexual recuperation. After excessive masturbation, long continued, it has been found impaired, but seldom entirely absent in young subjects. It is not impaired in masturbation when the habit has not destroyed the sexual power. It disappears in some cases of chronic meconism and becomes abeyant in long and beastly intoxication, though often excitable in acute alcoholism. This subject needs further investigation. It is lowered and abeyant in the later stages of typhoid fever. The virile reflex does not always sympathise with the other reflexes in spinal column or cord diseases. Dr. Hughes found it absent in a case diagnosticated as disseminated sclerosis, where there was exaggerated patellar reflex; he has also found it absent in the status epilepticus, but not necessarily modified in hemiplegia. It was exaggerated in a case of paraplegia of cerebral origin. To elicit the reflex described by M. Onanoff, "the index finger of the left hand is placed on the region of the bulb of the urethra, the right hand rapidly rubs the dorsal surface of the glans with the edge of a piece of paper, or again lightly pinches the mucous membrane. In these conditions the index finger applied upon the region of the bulb perceives a more or less intense twitch which is in relation with the contraction of the ischio- and bulbo-cavernous muscles. The discovery of this reflex was communicated to the Soc. de Biologie, May 3rd, 1890. Dr. Brown-Séquard, in the *Archives of Physiology,* makes note of these reflexes—(*Alienist and Neurologist.*)

The Anal Reflex.—This reflex was first called attention to by Rossolimo, who says that it consists in a contraction of the anal sphincters in response to a stimulation of the skin and mucous membrane of the anus. It is invariably present in man in health. The branches of the inferior hæmorrhoidal, pudendal, and perineal nerves, on which this reflex depends, are connected with the third and fourth roots of the sacral plexus, which spring from nerve-cells in the conus medullaris. This reflex can be obtained in the dog as well as in man, and Rossolimo cut the spinal cord across at different levels from above downwards. Whenever the lumbar enlargement was cut across at the level of the entry of the third sacral nerve, the anal reflex suddenly disappeared, from which it follows that the cells of the spinal cord which are connected with this reflex are situated in the third quarter of the lumbar enlargement, reckoning from above downwards. In another series of experiments the lumbar enlargement was exposed, and the sacral roots were cut one at a time. By this means it was proved that the anal reflex depended upon the integrity of the third and fourth sacral roots. This reflex, therefore, has its seat in the cord lower than any other reflexes. The author has examined this reflex in a great many conditions, and he comes to the following conclusions:—It is increased in some cases of neurasthenia, in cases of myelitis high up in the cord, and in conditions in which there is a general exaltation of sensations. It is lost in multple neuritis affecting the sacral plexus, in some cases of tabes, and in myelitis of the lower portion of the cord; and in these cases there is generally also anæsthesia of the rectum, anus, and urethra. It remains normal in functional derangements of the bladder, the rectum, and the sexual apparatus.—(*Boston Surg. and Med. Journ.*)

Marchi's Method of Staining.—In the *Centralbtt. f. Nervenheilkunde u. Psych.*, March, 1892, Dr. Redlich has an article on Marchi's method of staining preparations of the nervous system. He has worked with this method in Obersteiner's laboratory, and after much experience is prepared fully to endorse the very favourable criticism that has been passed upon it. The method is briefly stated as follows:—The piece of nervous tissue to be examined—which should be as small as possible, from 3 to 4 mm. high—is kept in a 2 per cent. solution of bichromate of potassium, or in Müller's fluid, for eight days (longer does not hurt); it is next placed in a mixture composed of two parts of a three per cent. solution of bichromate of potassium, and one part of a one per cent. solution of osmic acid, for five or eight days until it becomes almost entirely black. It is then further hardened in alcohol, and finally cut in celloidin or photoxylin. Sections of normal nerve-tissues are stained equally throughout of a brownish colour, nerve-fibres and ganglion cells being well differentiated. Degenerated tracts of fat granules, and fatty pigment of ganglion cells, appear deep black against a brown ground. A degenerated nerve-fibre is marked out by a series of black globules of varying size, occupying the medullary sheath; or in a more advanced stage of disease by balls of myelin, fat granules, and detritus—stained black. The chemical basis of the process is as follows:—Myelin, when combined with bichromate of potassium, no longer gives a black reaction with osmic acid. This method of staining presents us with positive pictures of Pal's method. Dr. Redlich has been able by employing it to follow up tracts of degeneration in the cord with great accuracy, and states that degenerated fibres are portrayed by it in greater detail than is the case by any other method. In preparations of brains of general paralytics, made by him after Marchi's method, the degeneration of nerve-cells and myelin, and the accumulation of fat granules upon the walls of vessels, were very well shown. With the peripheral nervous system also good results were obtained. Sections stained in this way permit of subsequent double staining (carmine-fuchsin).

Stieda's Method for making Dry Preparations of the Brain.—Dr. Ludwig Stieda describes (*Neurolog. Centralbtt.*, March 1, 1892) a method of making dry preparations of the brain. The organ is first placed in a concentrated aqueous solution of zinc chloride. Sufficient of the latter is used to cause the brain to "swim" in the fluid. It remains in this for twenty-four hours. The pia mater is now removed, this being easily accomplished; the brain is now placed in ninety-six per cent. alcohol, which is renewed every five or six days. In two or three weeks the organ is sufficiently hard; it is advisable to dehydrate it thoroughly in the alcohol before it is placed in the next medium, which is turpentine—in this the brain remains from two to four weeks. It becomes again somewhat soft, but also translucent, and acquires a brownish tint from the action of the turpentine. Lastly, and this is the special feature of the process, the brain is placed in the ordinary drying oil (oil varnish) of commerce, such as is employed in oil painting. Here it lies for two weeks, after the expiration of which time the organ is removed and exposed unprotected to the air for from one to two weeks, at the temperature of the room. The brain becomes quite dry, and loses its oily feeling. The author states that brains so prepared have an agreeable brown colour, are but little shrunk, and are well adapted for teaching purposes.

(*To be continued.*)

MRS. MAYBRICK.

THE *Occidental Medical Times* devotes nearly eight pages of its March number to a re-statement of Mrs. Maybrick's case from her advocates' point of view, in which all that can be said in favour of the "possibility that this unfortunate woman may be innocent of the crime of which she has been convicted," is said. The "special article" is founded on Mr. Macnamara's and Dr. Tidy's *Toxicological Study*. The Home Secretary, in commuting Mrs. Maybrick's sentence, stated that "the evidence leads clearly to the conclusion that the prisoner administered and attempted to administer arsenic with intent to murder." If this be so—and we do not doubt that it is so—Mrs. Maybrick may well be left where she is. Substantial justice has been done; and even the fact that she is "an American of Southern birth" does not induce us to wish the case reopened.

PART IV.

MEDICAL MISCELLANY.

Reports, Transactions, and Scientific Intelligence.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

President—George H. Kidd, M.D., F.R.C.S.I.
General Secretary—W. Thomson, F.R.C.S.I.

SECTION OF OBSTETRICS.

President—Andrew J. Horne, F.R.C.P.I.
Sectional Secretary—F. W. Kidd, M.D.

Friday, April 29, 1892.

The President in the Chair.

Appendages removed for Uterine Fibro-Myoma.

Dr. C. Yelverton Pearson (Cork) exhibited and read notes of appendages removed for uterine fibro-myoma.

Mrs. H. M., sent me by Dr. Lyne, of Castletown, Berehaven, for abdominal tumour. Admitted, County and City of Cork Hospital for Women and Children, September 17th, 1891.

History.—Farmer's wife, married sixteen years, never pregnant, was healthy up to three years ago, then complained of palpitation, pain in cardiac and left scapular regions from time to time, also of a rheumatic pain in the right shoulder.

Noticed a swelling in lower part of abdomen three years ago; this has gradually increased, and of late has caused inconvenience in ordinary occupations of life. Menses occurred last week and were rather excessive in amount. They did not occur for eight months before. They were regular previously, except for a time when they did not appear for three months; there is no dysmenorrhœa or leucorrhœa.

Present Condition.—Is anæmic in appearance; has a mitral systolic bruit, also a patch of broncho-pneumonia in lower lobe of right lung; slight cough; appetite bad; bowels costive; is of nervous disposition; not well nourished; there is a hard tumour in hypogastric region, extending 1½ inches above umbilicus; this gets larger before menstrual periods and diminishes after; it is not painful; the tumour feels very hard and solid, is asymmetrical, most prominent to the right side.

Measurements.—Circumference at ensiform, 30 inches; circumference at umbilicus, 31½ inches; on level with anterior spines and over most prominent part tumour, 34 inches; ensiform to umbilicus, 7 inches; umb. to symphysis, 8 inches; umb. to ant. sup. spine, 7½ inches; do. left, 7 inches.

Vaginal Examination.—Uterus very high; os can just be reached; sound passes 2½ inches; moves slightly when tumour is moved; the latter only admits of slight lateral motion, cannot be forced into pelvis.

Diagnosis.—"Nodular uterine fibro-myoma," most probably springing from posterior aspect of uterus.

After careful consideration I recommended removal of the uterine appendages for the following reasons:—1st—The tumour was beginning to interfere with the woman's ordinary avocations. 2nd—Considering her age, thirty-seven, it was probable that it would grow much larger if left to nature before the onset of the menopause. 3rd—The symptoms and nature of the tumour did not indicate the necessity for hysterectomy. 4th—The existence of sterility for sixteen years rendered it highly improbable that impregnation would take place, and if it did the tumour would interfere with the ordinary course of gestation. 5th—The hard and nodular character of the tumour indicated that it would be a favourable case for Tait's operation.

Accordingly, the nature and result of the operation having been fully explained, I obtained the consent of the woman herself, her husband, her clergyman, and Dr. Lyne, to perform it.

This was done, October 6th, 1891, by an incision in the linea alba 2 inches in length; the operation was completed in twenty minutes, no difficulty being encountered except for a tendency of the small intestines to prolapse into the wound, owing to an elongated mesentery. The Staffordshire knot was employed, and the appendages were removed as close to the uterus as possible, this being proved by the length of the Fallopian tubes which I now show you, each of which, even in its present condition, when more or less shrunk by the action of spirit, is fully 4 inches long.

The subsequent progress of the case was entirely satisfactory—the wound united by first intention—but I refrain from giving particulars as it would occupy too much time.

On making measurements, October 31st, *i.e.*, twenty-five days after operation, the circumference over the most prominent part of tumour was 4 inches less than at the time of operation.

To now show you the appendages, which have the following characters:—Both tubes are healthy, and the portion removed measured when recent nearly 4½ inches. The right ovary was slightly enlarged, very hard, and marked by numerous irregular fissures and depressions. The left ovary was half as large again as a full-sized walnut, and was chiefly occupied with a dermoid cyst about the size of a pigeon's egg containing sebaceous matter.

I believe the absence of hæmorrhage in this case to be due partly to the previous anæmia, and also to the subperitoneal nature of the growth.

Double Monster.

DR. W. J. SMYLY exhibited and read notes on a case of double monster. The mother was a tripara, aged twenty-seven. Four feet presenting, it was supposed to be twins. Labour occupied 21 hours, and was easily terminated by traction on the legs. The deformity is different from any that Dr. Smyly had seen or read of. The right sides of both heads are fused together, so that a face appears on both aspects, with an occiput and ear on either side of it. One face is further deformed by a hare-lip. The bodies are fused together in front as low as the umbilicus (thoracopagus), but the eight extremities are perfect. There was only one umbilical cord and one placenta. Both children were males.

1. These double monsters may be classified into those united by their heads, *duplicitas posterior*. 2. Those united by their caudal extremities, *duplicitas anterior*. 3. Those united by their bodies *duplicitas parallela*. Of the latter there are two sub-varieties:—*a*. Double headed with united bodies. *b*. Heads united but bodies separate below. The specimen exhibited is an example of the latter form, which, according to Dr. Playfair, is the rarest of all. Two cases only are referred to in his monograph on this subject.

Hydatidiform Mole.

DR. C. YELVERTON PEARSON (Cork) exhibited and read notes on a case of hydatidiform mole.—J. H., aged thirty-seven, admitted to County and City of Cork Hospital for Women and Children, March 19th, 1892. Rather anæmic, spare, and badly nourished.

History.—Married 13 years; 8 children; confinements good, except one 5 years ago, at which placenta was removed, and one 7 years ago, which was a cross-birth, when version was performed. Last child born March, 1891; nursed infant three months. Menses reappeared after weaning, and continued regularly up to Dec. 21st. Had been ailing for 8 weeks before coming here, with sickness of stomach and frequent vomiting. A fortnight ago had what she believed to be a miscarriage, when she lost some blood and water, and passed a large clot. Ever since then there has been slight sanious discharge of a brownish tint; the vomiting and sick sensation has ceased since the clot was passed.

Examination showed considerable prominence of hypogastrium. Os somewhat patulous. Conjoined manipulation gave evidence that the uterus was as large as at end of 5th month of pregnancy. No ballottement or auscultatory signs could be detected; the uterus felt uniformly enlarged and somewhat softer consistence than consistent with ordinary pregnancy. Careful measurements were taken. The vagina was douched twice daily with creolin and hot water. The patient was kept lying down and the nature of discharges was carefully watched, as I had suspicion of mole pregnancy. Nothing characteristic appeared, but a brownish-red discharge continued in small quantity; and as the uterus was continuing to enlarge more than would be consistent with an ordinary pregnancy, on April 5th I determined to dilate the cervix and empty the uterus of its contents. Accordingly I passed 3 laminaria tents and plugged vagina; in 12 hours these were removed, and at once there was a free gush of hæmorrhage, which nearly ceased on making firm pressure over the fundus. I passed the forefinger into the cervix, and feeling what closely resembled a central placenta prævia, I swept the finger round the interior of the cervix and detached the soft mass as high as the finger would reach. Not having any Barnes' bags at hand, I plugged the cervix with iodoform gauze, and also plugged the vagina, ordered an opiate, and gave instructions to have the case closely watched. During the night pains came on with some hæmorrhage, but nothing excessive—everything was left to nature; and at 9 a.m. the following morning the hydatidiform mass I now show you was expelled with all the plugs. There was free hæmorrhage for a short time, which was checked by the nurse making pressure on the fundus and douching uterus with creolin and hot water. On my arrival almost immediately after I found the patient very collapsed, so gave some brandy hypodermically, elevated the lower limbs and pelvis, and as soon as it was ready administered an enema of 1 oz. brandy, 15 minims Battley, and 4 oz. black coffee, which produced good reaction, and was repeated in 2 hours, omitting the opium. The patient has made an excellent recovery.

The points of interest to my mind are, first, the difficulty of making an accurate diagnosis owing to no cysts appearing in the discharge; and, second, the early date at which the case came under observation—viz., third month.

Case of Absence of Uterus; Double Ovarian Hernia.

THE HON. SECRETARY read for DR. DAVID JACOB (Maryborough) notes on a Case of Absence of Uterus and Double Ovarian Hernia.

A healthy-looking girl of eighteen years, rather below average height, and of proportionate weight, applied at the Queen's County Infirmary for treatment of amenorrhœa. Preliminary inquiry elicited the statement that she had never menstruated, and further investigation manifested what had the appearance of well-marked double inguinal hernia, such as might easily have caused the true nature of the case to be overlooked and treatment to be confined to the simple application of a truss. However careful examination failed to discover evidence of descent of intestine, but, during the full presence of each labial tumour, there was to be found a firm and circumscribed body in each, corresponding with what would be a fully developed ovary, quite up to or above the usual size, that of the left side being rather larger that the right and constricted slightly in the middle. Neither caused pain on reasonable pressure with finger and thumb, and both are so readily reducible that they immediately return spontaneously on resuming horizontal position, or under very slight pressure when erect. The left tumour is larger than the right, more than the difference of size of ovaries would explain. They are stated to have gradually increased in size since their discovery about five years ago, *i.e.*, at the age of thirteen years. Careful bimanual examination between the vagina or the rectum and the supra pubic region failed to detect any trace of even a rudimentary uterus. The vagina is a capacious pocket little more than two inches deep. Sexual appetite is admitted and was very early gratified. The hymen is not intact. The external genitals present the normal adult appearances, with the exception of complete absence of pudendal hair. The mammæ are of average development. No constitutional disturbances appear to have resulted from the absence of the menstrual function.

DR. ATTHILL regretted that Dr. Jacob had not touched upon the question of the treatment of this double hernia of ovaries, as he thought that such a condition if left untreated might give rise to very serious trouble.

Dilatation of the Uterus and the Treatment of some of the Common Forms of Uterine Disease.

DR. ATTHILL read a paper on dilatation of the uterus and the treatment of some of the common forms of uterine disease. After pointing out that the advance made in abdominal surgery had in this respect an unfortunate effect, in so far that it induced students and junior practitioners to neglect the study of the common forms of uterine disease, which are the source of so much suffering to women, he traced the various methods of dilatation practised since the days of Sir James Simpson, and expressed his opinion that rapid dilatation should be employed only in cases in which the cervix was soft and relaxed, and os uteri patulous. He advocated in all others the introduction, in the first instance, of one or two short laminaria tents, which in eight or ten hours induced that relaxed condition which was desirable, the dilatation being, on their withdrawal, completed to the requisite extent by the use of Hegar's or some other form of dilators, and he also advised, in those cases in which the curette was employed, the subsequent injection into the uterus of small quantities, commencing with 5 or 6 minims only at a time, by means of Barnes' syringe, of tincture of iodine, iodised phenol, or some similar agent. He found this treatment, if carefully carried out, to be perfectly safe, and in many cases found that its use obviated the necessity of dilatation and curetting.

DR. C. YELVERTON PEARSON (Cork) said he rose with a considerable degree of hesitation to speak on a paper by Dr. Lombe Atthill, as, although not a pupil of Dr. Atthill, still he owed many of his earliest impressions on women's diseases, and not a few of his earliest successes in gynæcological practice, to the teaching contained in Dr. Atthill's writings. From the paper they had just listened to, it was evident that Dr. Atthill's opinions had undergone a considerable revolution during the past 10 or 12 years; and it was not to be wondered at that his (Dr. Pearson's) opinions had also changed considerably during that period; and it was indeed very gratifying to him to find his present views on the treatment of intra-uterine disease so closely in accord on most points with those he had just heard expressed. The fact that there were so many methods recommended for dilating the cervix uteri—and such a number of dilators in existence, which number was being constantly augmented—was, to his mind, a sufficient indication that no one method of dilatation was satisfactory in all cases. His own practice varied according to the nature of the case. For example, if a case presented itself where there was no doubt that the symptoms were due to an unhealthy condition of the endometrium he employed rapid dilatation, and curetted the interior of the uterus at once, unless he found considerable resistance at the os internum, in which case he did not think it justifiable to proceed, but inserted one or more laminaria tents, as advocated by Dr. Atthill, and waited for six or more hours until they had produced their wonderfully softening influence, after which the dilatation could be readily carried out to the necessary extent. In all cases where there was an unusually narrow cervix he considered the combined method the safer. Again, where for purposes of diagnosis it was considered necessary to explore the interior of the uterus with the finger for polypus, submucous fibroid, &c., he considered it advisable to carry out a portion of the dilatation by means of tents, which he believed, with Dr. Atthill, were quite safe if carefully used, without tight pushing, and with due regard to cleanliness. It had been his custom until somewhat recently to apply either iodised phenol, or a saturated solution of carbolic acid in glycerine after employing the curette. But of late he had ceased doing so, and merely douched out the uterus with creolin and hot water, or the latter alone. He had no experience of the use of intra-uterine injections in the manner indicated by Dr. Atthill; in the first place, he was rather afraid of them, which was probably the result of prejudice; and, in the second, the curette had yielded him such satisfactory results that up to the present he had felt no inclination to try other methods. But possibly the strong way in which injections had been advocated by Dr. Atthill might cause him to alter his practice in future. The dilators he employed were not any of those in general use, and he hoped on some future occasion to bring his own dilators under the notice of the Section.

DR. SMYLY also spoke, and DR. ATTHILL replied.

The Section then adjourned.

COMPENSATION FOR ACCIDENTS.

THE *New York Independent* gives some remarkable cases of claims for compensation after accidents. In the first the decision is unfortunately omitted. A man was entitled to a certain compensation for the "loss of two entire feet." The feet remained, attached and uninjured, but useless, paralysis having followed a shot in the back. Another man claimed for "loss of both eyes;" but he had lost only one in the accident, having had but one when he recovered. As the insuring company's agent knew this fact when he accepted the risk, it was ruled that "loss of both eyes" meant "entire loss of eye-sight." Accident policies provide against liability when the insurer suffers while engaged temporarily or permanently in an occupation more hazardous than his work was when he insured. Thus, one insured as a book-keeper who takes to repairing church steeples as an occupation has no claim. But change of occupation for amusement does not vitiate the policy. Thus, compensation was given where the insured was accidentally killed when shooting. A man insured as a "gentleman" hurt himself working with a lathe, and was compensated. A man was killed while hurrying across the track at a railway station to reach the platform, "aided or impeded by shouts to 'look out for the express,'" it was left to the jury to decide whether this was negligence; and it was ruled that, if a man of ordinary prudence would do the same in those circumstances, his death was not due to a voluntary act of his own. It has been decided that if a person is injured while riding on the platform or step of a railroad car, there being no safer place available, and the conductor allowing him to remain there, he can recover compensation. A man was killed in trying to save two persons crossing a line: it was held that the stipulation in the policy, that the insurance "shall not extend to or cover voluntary exposure to unnecessary danger," did not cover the case. Hernia followed an accident; a consequent operation resulted in fatal peritonitis: it was held that death was due to the accident, the operation being necessary as the only apparent means of saving life.

SANITARY AND METEOROLOGICAL NOTES.

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VITAL STATISTICS

For four Weeks ending Saturday, October 8, 1892.

The deaths registered in each of the four weeks in the sixteen principal Town Districts of Ireland, alphabetically arranged, corresponded to the following annual rates per 1,000:—

Towns	Weeks ending				Towns	Weeks ending			
	Sept. 17.	Sept. 24.	Oct. 1.	Oct. 8.		Sept. 17.	Sept. 24.	Oct. 1.	Oct. 8.
Armagh -	0·0	7·0	21·0	7·0	Limerick -	15·4	22·5	30·9	11·2
Belfast -	21·6	21·8	25·5	24·6	Lisburn -	0·0	12·8	17·0	8·5
Cork -	22·1	21·5	18·7	24·2	Londonderry	28·3	14·1	14·1	23·6
Drogheda	8·8	4·4	17·6	8·8	Lurgan -	18·2	9·1	31·9	18·2
Dublin -	22·4	19·1	20·9	19·7	Newry -	24·1	24·1	8·1	24·1
Dundalk -	8·4	8·4	37·7	8·4	Sligo -	15·2	25·4	10·2	25·4
Galway -	15·1	26·4	34·0	30·2	Waterford -	20·0	10·0	32·5	17·5
Kilkenny	14·2	23·6	23·6	23·6	Wexford -	13·5	31·6	4·5	13·5

In the week ending Saturday, September 17, 1892, the mortality in thirty-three large English towns, including London (in which the rate was 16·9), was equal to an average annual death-rate of 18·6 per 1,000 persons living. The average rate for eight principal towns of Scotland was 17·0 per 1,000. In Glasgow the rate was 18·8, and in Edinburgh it was 17·3.

The average annual death-rate represented by the deaths registered during the week in the sixteen principal town districts of Ireland was 20·7 per 1,000 of the population, according to the Census of 1891.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 3·3 per 1,000, the rates varying from 0·0 in nine of the districts to 6·3 in Londonderry—the 18 deaths from l causes registered in that district comprising 2 from enteric fever and 2 from diarrhœa. Among the 106 deaths from all causes registered in Belfast are 1 from measles, 1 from scarlatina, 2 from simple continued fever, 6 from enteric fever, and 13 from diarrhœa. The 32 deaths in Cork comprise 1 from typhus and 1 from whooping-cough.

In the Dublin Registration District the registered births amounted to 215—105 boys and 110 girls; and the registered deaths to 156—86 males and 70 females.

The deaths, which are 13 under the average number for the corresponding week of the last ten years, represent an annual rate of mortality of 23·3 in every 1,000 of the population. Omitting the deaths (numbering 6) of persons admitted into public institutions from localities outside the district, the rate was 22·4 per 1,000. During the first thirty-seven weeks of the current year the death-rate averaged 31·5, and was 3·8 over the mean rate in the corresponding period of the ten years 1882–1891.

The number of deaths from zymotic diseases registered is 30, being 5 below the average for the corresponding week of the last ten years, and 17 under the number for the week ended September 10. The 30 deaths comprise 1 from measles, 1 from influenza, 1 from whooping-cough, 1 from ill-defined fever, 3 from enteric fever, 17 (including 16 deaths of children under 5 years of age) from diarrhœa, 1 from dysentery, and 1 from erysipelas.

Twenty-five cases of enteric fever were admitted to hospital against 17 admissions in the preceding week: 13 enteric fever patients were discharged, 1 died, and 86 remained under treatment on Saturday, being 11 over the number in hospital on Saturday, September 10.

Only 1 case of scarlatina was admitted to hospital, and no cases of either typhus or measles were received: 13 cases of scarlatina, 1 case of typhus, and 1 of measles remained under treatment in hospital on Saturday.

The number of deaths from diseases of the respiratory system was 12, being 5 under the number for the preceding week and 9 under the average for the 37th week of the last ten years. The 12 deaths comprise 6 from bronchitis, 3 from pneumonia or inflammation of the lungs, and 1 from croup.

In the week ending Saturday, September 24, the mortality in thirty-three large English towns, including London (in which the rate was 15·1), was equal to an average annual death-rate of 17·2 per 1,000 persons living. The average rate for eight principal towns of Scotland was 17·9 per 1,000. In Glasgow the rate was 19·3, and in Edinburgh it [illegible]·5.

[illegible]age annual death-rate in the sixteen principal town districts of Ireland was 19·6 per 1,000 of the population according to the Census of 1891.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 3·3 per 1,000, the rates varying from 0·0 in six of the districts to 9·0 in Wexford—the 7 deaths from all causes registered in that district comprising 2 from diarrhœa. Among the 107 deaths from all causes registered in Belfast are 1 from scarlatina, 1 from diphtheria, 4 from enteric fever, and 17 from diarrhœa. Among the 31 deaths in Cork are 1 from whooping-cough, 2 from enteric fever, and 1 from diarrhœa. The 16 deaths in Limerick comprise 1 from whooping-cough, 1 from enteric fever, and 1 from diarrhœa.

In the Dublin Registration District the registered births amounted to 181—93 boys and 88 girls; and the registered deaths to 132—67 males and 65 females.

The deaths, which are 36 under the average number for the corresponding week of the last ten years, represent an annual rate of mortality of 19·7 in every 1,000 of the population. Omitting the deaths (numbering 4) of persons admitted into public institutions from localities outside the district, the rate was 19·1 per 1,000. During the first thirty-eight weeks of the current year the death-rate averaged 31·2, and was 3·6 over the mean rate in the corresponding period of the ten years 1882–1891.

The number of deaths from zymotic diseases registered is 21, being 12 below the average for the corresponding week of the last ten years, and 9 under the number for the week ended September 17. The 21 deaths comprise 1 from scarlet fever (scarlatina), 1 from whooping-cough, 2 from enteric fever, 14 (including 13 deaths of children under 5 years of age) from diarrhœa, and 1 from dysentery.

Thirty-one cases of enteric fever were admitted to hospital, being 6 over the number of admissions for the preceding week. Eleven enteric fever patients were discharged, 4 died, and 102 remained under treatment on Saturday, being 16 over the number in hospital at the close of the preceding week.

The hospital admissions for the week include, also, 1 case of measles and 3 cases of scarlatina, but no cases of typhus were received: 2 cases of measles, 13 cases of scarlatina, and 1 case of typhus remained under treatment in hospital on Saturday.

Only 11 deaths from diseases of the respiratory system were registered, being 1 under the low number for the preceding week and 8 under the average for the 38th week of the last ten years. They consist of 8 from bronchitis, 1 from pneumonia or inflammation of the lungs, and 2 from croup.

In the week ending Saturday, October 1, the mortality in thirty-three large English towns, including London (in which the rate was 15·2), was equal to an average annual death-rate of 16·6 per 1,000 persons living. The average rate for eight principal towns of Scotland was 17·1 per 1,000. In Glasgow the rate was 18·0, and in Edinburgh it was 14·5.

The average annual death-rate represented by the deaths registered in the sixteen principal town districts of Ireland was 22·5 per 1,000 of the population based on the Census of 1891.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 2·8 per 1,000, the rates varying from 0·0 in eleven of the districts to 10·0 in Waterford—the 13 deaths from all causes registered in that district comprising 4 from diarrhœa. Among the 125 deaths from all causes registered in Belfast are 1 from measles, 2 from simple continued fever, 4 from enteric fever, and 10 from diarrhœa. The 9 deaths in Londonderry comprise 1 from whooping-cough and 1 from simple continued fever.

In the Dublin Registration District the registered births amounted to 185—105 boys and 80 girls; and the registered deaths to 144—72 males and 72 females.

The deaths, which are 28 under the average number for the corresponding week of the last ten years, represent an annual rate of mortality of 21·5 in every 1,000 of the population. Omitting the deaths (numbering 4) of persons admitted into public institutions from localities outside the district, the rate was 20·9 per 1,000. During the first thirty-nine weeks of the current year the death-rate averaged 30·9, and was 3·3 over the mean rate in the corresponding period of the ten years 1882-1891.

Twenty-six deaths from zymotic diseases were registered, being 5 over the number for the preceding week, but 4 under the average for the 39th week of the last 10 years. They comprise 1 from measles, 1 from scarlet fever (scarlatina), 1 from whooping-cough, 2 from enteric fever, 18 from diarrhœa, and 2 from dysentery.

The number of cases of enteric fever admitted to hospital was 27, being 4 under the admissions for the preceding week: 15 cases were discharged, 1 died, and 118 remained under treatment on Saturday, being 11 over the number in hospital on Saturday, September 24.

The hospital admissions include, also, 7 cases of scarlatina (against 3 admissions for the preceding week), and 1 case of measles, but no cases of typhus were received: 18 cases of scarlatina, 1 case of typhus, and 3 cases of measles remained under treatment in hospital on Saturday.

The number of deaths from diseases of the respiratory system registered is 13, being 2 over the low number for the preceding week, but 8 under the average for the 39th week of the last ten years. The 13 deaths comprise 7 from bronchitis, 4 from pneumonia or inflammation of the lungs, and 1 from croup.

In the week ending Saturday, October 8, the mortality in thirty-three large English towns, including London (in which the rate was 16·4), was equal to an average annual death-rate of 17·8 per 1,000 persons living. The average rate for eight principal towns of Scotland was 18·5 per 1,000. In Glasgow the rate was 19·6, and in Edinburgh it was 19·8.

The average annual death-rate in the sixteen principal town districts of Ireland was 20·9 per 1,000 of the population according to the Census of 1891.

The deaths from the principal zymotic diseases registered in the sixteen districts were equal to an annual rate of 2·0 per 1,000, the rates varying from 0·0 in ten of the districts to 8·1 in Newry—the 6 deaths from all causes registered in that district comprising 1 from enteric fever and 1 from diarrhœa. Among the 123 deaths from all causes registered in Belfast are 1 from measles, 1 from scarlatina, 1 from diphtheria, 4 from enteric fever, and 8 from diarrhœa. The 35 deaths in Cork comprise 1 from whooping-cough, 1 from simple continued fever, and 2 from diarrhœa.

In the Dublin Registration District the registered births amounted to 174—81 boys and 93 girls; and the registered deaths to 134—64 males and 70 females.

The deaths, which are 21 under the average number for the corresponding week of the last ten years, represent an annual rate of mortality of 20·0 in every 1,000 of the population. Omitting the deaths (numbering 2) of persons admitted into public institutions from localities outside the district, the rate was 19·7 per 1,000. During the first forty weeks of the current year the death-rate averaged 30·7, and was 3·3 over the mean rate in the corresponding period of the ten years 1882–1891.

Only 14 deaths from zymotic diseases were registered, being 14 below the average for the corresponding week of the last ten years, and 12 under the number for the week ended October 1. They comprise 3 from enteric fever, 9 from diarrhœa, and 1 from erysipelas.

The number of cases of enteric fever admitted to hospital was 18, being a decline of 9 as compared with the admissions for the preceding week: 10 patients were discharged and 121 remained under treatment on Saturday, being 8 over the number in hospital on Saturday, October 1.

No cases of measles, scarlatina, or typhus were admitted to hospital: 3 cases of measles and 16 of scarlatina remained under treatment in hospital on Saturday, but there were no cases of typhus in hospital.

Twenty-two deaths were caused by diseases of the respiratory system, being 1 in excess of the average for the corresponding week of the last ten years, and 9 over the low number for the week ended October 1. They comprise 12 from bronchitis, 6 from pneumonia or inflammation of the lungs, and 1 from pleurisy.

METEOROLOGY.

Abstract of Observations made in the City of Dublin, Lat. 53° 20′ *N. Long* 6° 15′ *W., for the Month of September,* 1892.

Mean Height of Barometer,	29·904 inches.
Maximal Height of Barometer (on 4th, at 9 p.m.),	30·318 ,,
Minimal Height of Barometer (on 30th, at 9 a.m.),	29·369 ,,
Mean Dry-bulb Temperature,	53·6°.
Mean Wet-bulb Temperature,	51·0°.
Mean Dew-point Temperature,	48·5°.
Mean Elastic Force (Tension) of Aqueous Vapour,	·344 inch.
Mean Humidity,	83·7 per cent.
Highest Temperature in Shade (on 12th),	65·6°.
Lowest Temperature in Shade (on 17th),	40·8°.
Lowest Temperature on Grass (Radiation) (on 17th),	35·1°.
Mean Amount of Cloud,	59·2 per cent.
Rainfall (on 19 days),	2·631 inches.
Greatest Daily Rainfall (on 20th),	·521 inch.
General Directions of Wind,	W, .S.W., N.W.

Remarks.

This month was changeable throughout. High winds from westerly points prevailed, showers fell frequently, and at times the weather was decidedly cold for the time of year. This was particularly the case during the last four days of the month. The maximal temperature was only 65·6°, or exactly 10° below the corresponding value in September, 1891, on the 10th of which month the thermometer rose to 75·6° in the shade. The mean temperature was 3·1° below that of September, 1891.

In Dublin the arithmetical mean temperature (54·5°) was decidedly below the average (55·8°); the mean dry bulb readings at 9 a.m. and 9 p.m. were 53·6°. In the twenty-seven years ending with 1891, September was coldest in 1886 and in 1882 (M.T. = 53·0°), and warmest in 1865 (M. T. = 61·4°). In 1880, the M. T. was as high as 58·6°; in the year 1879 (the "cold year"), it was 54·3°; in 1887, it was 54·0°; in 1888, it was 54·4°; in 1889, it was 55·8°, or exactly the average; in 1890, it was as high as 59·6°, and in 1891, it was 57·6°. So warm a September as that of 1890 had not occurred for a quarter of a century.

The mean height of the barometer was 29·904 inches, or 0·006 inch below the corrected average value for September—namely, 29·910 inches. The mercury rose to 30·318 inches at 9 p.m. of the 4th, and fell to 29·369 inches at 9 a.m. of the 30th. The observed range of atmospherical pressure was, therefore, ·949 of an inch—that is, a little less than one inch.

The mean temperature deduced from daily readings of the dry bulb thermometer at 9 a.m. and 9 p.m. was 53·6°, or as much as 5·4° below the value for August, 1892. Using the formula, *Mean Temp.* = *Min.* + (*max.*—*min.* × ·476), the mean temperature was 54·2°, or 1·3° below the average mean temperature for September, calculated in the same way, in the twenty-five years, 1865–89, inclusive (55·5°). The arithmetical mean of the maximal and minimal readings was 54·5°, compared with a twenty-five years' average of 55·8°. On 12th, the thermometer in the screen rose to 65·6°—wind, S.S.W.; on 17th the temperature fell to 40·8°—wind, W.S.W. The minimum on the grass was 35·1° also on 17th.

The rainfall was 2·631 inches, distributed over 19 days—both the rainfall and the rainy days were considerably above the average. The average rainfall for September in the twenty-five years, 1865–89, inclusive, was 2·176 inches, and the average number of rainy days was 14·7. In 1871 the rainfall in September was very large—4·048 inches on, however, only 13 days. On the other hand, in 1865, only ·056 inch was measured on but 3 days. In 1888, the rainfall was only ·728 inch on 10 days; in 1889, 1·043 inches fell on 13 days; in 1890, 2·469 inches fell on 14 days, and in 1891, 2·132 inches on 18 days.

High winds were noted on as many as 17 days, but attained the force of a gale on only two occasions—the 15th and 27th. A solar halo appeared on the 1st, lunar halos on the nights of the 6th and 7th. Lightning was seen on the 2nd. Hail fell on the 2nd.

During the first three days the arrival of a series of depressions, secondary to a large area of low barometrical pressure in the far North, kept the weather in a changeable, showery, squally condition, the showers being sometimes locally accompanied by thunder and lightning. On Friday, the 2nd, violent hail-storms swept over Dublin at 2 p.m. and 4 p.m., yielding ·270 inch of rain, while summer lightning was seen at night. As the period drew to a close the air became colder and drier. The rainfall of these three days amounted to ·708 inch.

Although changeable and showery, the weather of the week ended Saturday, the 10th, was by no means unfavourable—no deep depressions brought with them gales, nor were the rains heavy as a rule at the British stations. There was, however, a marked falling off in temperature, which generally ruled low for the time of year. Quantities of cold rain fell in Austria and Bavaria at the beginning of the period. Sunday was a very fine day in Ireland, over which an anticyclone advanced from the Atlantic, bringing with it northerly winds and a dry atmosphere. The succeeding night was clear and sharp, the shade thermometer falling to 45° in Dublin, 44° at Parsonstown, 40° at Nairn and Aberdeen, 39° in London and at Shields, and 38° at York. During the next few days, atmospherical pressure, while generally above the average, was very unstable, and shallow depressions formed here and there, causing rain or showers but no high winds. One of the most striking of these disturbances travelled northwestwards to the North Sea from Central

Europe between Wednesday and Friday, causing cold wet weather on the Continent. The amount of cloud was considerable, but there were intervals of pleasant sunshine. In Dublin the mean height of the barometer was 30·119 inches, pressure ranging between 30·318 inches at 9 p.m. of Sunday (wind N.W.), and 29·977 inches at 9 p.m. of Friday (wind W.). The corrected mean temperature was 54·9°. The mean dry bulb readings at 9 a.m. and 9 p.m. were 54·6. On Monday the screened thermometers rose to 63·7°; on Thursday they fell to 44·9. The rainfall was ·491 on six rainy days—·118 inch was measured on Monday and ·200 inch on Saturday. The prevailing winds were S.W. to N.W. Lunar halos were seen on the evenings of Tuesday and Wednesday.

The weather of the week ended Saturday, 17th, although changeable, and at times distinctly autumnal in character, was by no means unfavourable. A marked tendency to the formation of an anticyclone was observed over Central Europe and the South of England from time to time. In Ireland and Scotland as well as in Norway, on the other hand, the type of atmospherical pressure was entirely cyclonic, and at one time—On Friday morning—the barometer fell almost to 29 inches in the Hebrides. Accordingly, while dry and tolerably warm weather was enjoyed in England and on the Continent, a good deal of rain fell in Ireland and Scotland, where also the winds were strong and variable in direction. Sunday was very unsettled, and a considerable fall of rain occurred in the afternoon. The three following days were chiefly fine in Dublin, but on Thursday afternoon the wind blew a moderate gale from S.S.W. and S., and at night there was a sharp rainfall. Friday and Saturday were, on the whole, fine days, but temperature was low—on Friday night the grass minimum was 35·1° even in the city. In Dublin the mean height of the barometer was 29·901 inches, pressure ranging between 29·549 inches at 9 p.m. of Thursday (wind S.S.W.), and 30·187 inches at 9 a.m. of Saturday (wind W.S.W.). The corrected mean temperature was 55·2°. The mean dry bulb temperature at 9 a.m. and 9 p.m. was 54·9°. On Monday the thermometers in the shade rose to 65·6°, on Saturday they fell to 40·8°. The rainfall was ·333 inch on three days, ·247 inch being measured on Sunday. The prevalent winds were S.S.W. and W.

Except on Tuesday, which was very wet and inclement, the weather of the week ended Saturday the 24th, while changeable, was by no means unfavourable in Dublin, or indeed throughout Ireland. The most striking feature of the period under review was the abrupt change in the distribution of atmospherical pressure which took place in the course of Monday night, and which substituted N.E. for S.W. winds, the shift of wind being accompanied by gloom, heavy falls of rain in Ireland and England, and much thunder, lightning, and hail in the latter country. On Sunday pressure was low in the North, high over Germany, whence an anticyclone spread westwards across the south of England.

Strong S.W. winds prevailed, and the weather was showery or rainy in Ireland and Scotland. During Monday gradients for S.W. winds rapidly died out, so that on Tuesday morning the barometer was highest over Scotland, while shallow areas of low pressure were found off the south of Ireland and over the English Channel. Heavy rains fell in Ireland, thunderstorms occurred in England, while temperature fell so fast under a clear sky and with a calm atmosphere in Scotland that the thermometer fell to 25° at Nairn, 32° at Aberdeen, and 34° at Stornoway and Wick—this too at a time when the night minimum was 60° at Dungeness and Hurst Castle. A complex low pressure area lay for the next two days over the English Channel and Belgium, causing a continuance of dull, wet weather in England. On Friday gradients for S.W. and W. winds were re-established in Ireland. In Dublin the mean height of the barometer was 30·030 inches, pressure ranging from 29·838 inches at 9 p.m. of Sunday (wind, S.S.W.) to 30·285 inches at 9 a.m. of Thursday (wind, E.N.E.) The corrected mean temperature was 54·5°. The mean dry bulb temperature at 9 a.m. and 9 p.m. was 54·1°. The screened thermometers rose to 63·7° on Monday and fell to 45·1° on Thursday. The rainfall amounted to ·699 inch on four days, ·521 inch being measured on Tuesday. The prevailing winds were S.W. and N.E.

The closing period (25th–30th) was very cold and changeable, with fresh to squally westerly and north-westerly winds and showers. All through the barometer was low in the far north, high over central Europe. At times shallow depressions formed as subsidiaries to the main area of low pressure in the north; and, as these swept eastward across the British Islands, squalls and cold showers of rain and hail were prevalent. Very heavy rains fell over the south of England on Thursday the 29th. In Dublin, the first two days of the period were fine and breezy. Early on Tuesday, the 27th, rain fell, accompanied by a moderate gale from S.W. In the course of this day the wind veered to W.N.W. and temperature fell fast, never recovering up to the close of the month. On Sunday, the 25th, the thermometer in the screen rose to 63·5°; on Friday, the 30th, it fell to 42·7°. The rainfall was ·400 inch on four days.

The rainfall in Dublin during the nine months ending September 30th has amounted to 19·910 inches on 150 days, compared with 10·968 inches on 112 days during the same period in 1887, 17·992 inches on 131 days in 1888, 19·936 inches on 147 days in 1889, 20·855 inches on 151 days in 1890, 18·020 on 135 days in 1891, and a 25 years' average of 19·734 inches on 142·8 days.

At Knockdolian, Greystones, Co. Wicklow, the rainfall in September, 1892, was 2·587 inches, distributed over 17 days. Of this quantity ·750 inch fell on the 20th, and ·330 inch on the 10th.

On the morning of the 22nd an extraordinary migration southwards of swallows was witnessed along the coast at Greystones.

PERISCOPE.

THE PLAGUE OF CHOLERA IN HAMBURG.

We are now in a position to realise the terrible nature of the recent outbreak of cholera in this devoted city. The population of the State of Hamburg is 625,050. The facts are embodied in the following table:—

Week ending	Deaths	Annual death rate per 1,000	Deaths from diarrhœal diseases	Deaths from cholera
August 13 - -	295	24·5	75	?
August 20 - -	399	33·2	138	?
August 27 - -	1,859	154·7	1,520	?
September 3 - -	4,168	346·7	3,710	2,908
September 10 - -	2,863	238·2	2,436	1,935
September 17 - -	1,733	144·2	1,368	1,099
September 24 - -	1,065	88·6	793	645
October 1 - -	528	43·9	280	211
Totals for 8 weeks	12,910	—	10,320	?

HONOURS TO AN IRISH PHYSICIAN.

The *Lancet* of Oct. 15th, 1892, contains the following:—"*Medical Prize.*—John Strahan, M.D., Belfast, has been awarded the Triennial Warren Prize, value 500 dollars, given by the General Hospital, Massachusetts, U.S., for a treatise on 'Rickets.' The Boston prize was open to competition by all the world, and was to be withheld if no essay of sufficient excellence was submitted. It will be published shortly. In 1886 Dr. Strahan gained the Fothergill Gold Medal, value twenty guineas, of the London Medical Society, for an essay on 'The Varieties and Complications of Typhoid Fever;' and in 1889 the Jenks Memorial Prize of 250 dollars, given by the College of Physicians, Philadelphia, for an essay on 'Extra-Uterine Pregnancy,' for which he was also elected Corresponding Member of the College."

SACRAL HYSTERECTOMY.

Dr. Kammerer read a paper on this operation before the New York Academy of Medicine in December last. He thinks the immediate results of extirpation of the uterus by removing part of the sacrum are encouraging, and that this method "may claim precedence of laparotomy in cases of cancer of the uterus where the growth is no longer confined to that organ itself." Including his own case, he reports 26 cases with 8 deaths (31 per cent.)—"1 from shock, 2 from pelvic cellulitis, 3 after ligature of one of the ureters, and 1"—his own—"presumably from iodoform poisoning." The details of Dr. Kammerer's operation are not pleasant reading. "On the fourth day symptoms of iodoform intoxication set in," and on the seventh the patient escaped—by death. The paper will be found in the *N. Y. Medical Record* for 20th Feb., 1892.

TUBERCULIN IN LEPROSY.

ONE has almost forgotten tuberculin in these days. Echoes of the noise it made come back upon us now and then from distant lands; and a paper by Dr. Elsner, in the *Australasian Medical Gazette*, reports results of treatment of six cases of leprosy by injections of tuberculin. The author concludes—(1) that the drug produces local and general reactions; (2) that the reaction is less powerful in the macular than in the tubercular form; (3) that the local reaction is apparent immediately after the injection of one mgrm., the general reaction very much later; (4) that the treatment causes slight loss of strength, not explicable by the febrile disturbance; (5) that lepers should get a chance of benefit by treatment with tuberculin.

TUBERCULOCIDIN.

WE have received the following letter from Messrs. Burroughs, Wellcome, and Co., Snow Hill Buildings, London, E.C.:—

"October 4, 1892.

"The Editor, DUBLIN MEDICAL JOURNAL,
"41 Grafton-street, Dublin.

"DEAR SIR,—We observe in the issue of the DUBLIN MEDICAL JOURNAL for July,[a] that you inform your readers that Tuberculocidin may be obtained elsewhere than from Messrs. Burroughs, Wellcome, and Co. We beg to say that we are sole agents, and shall be pleased to supply any quantity of it.

"Yours very truly,

"BURROUGHS, WELLCOME, and Co."

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[a] Vol. XCIV., No. 247. Third Series. Page 52.

THE DUBLIN JOURNAL
OF
MEDICAL SCIENCE.

CONTENTS.

THIRD SERIES, No. CCLII.—DECEMBER 1, 1892.

PART I.—ORIGINAL COMMUNICATIONS.

PAGE

ART. XXI.—The Surgery of To-day. By EDWARD HAMILTON, M.D.; President of the Royal College of Surgeons in Ireland, - - 465

ART. XXII.—On the Physical Signs of Pleural Effusion. By DAVID DRUMMOND, M.D.; Physician to the Royal Infirmary, &c., &c., 472

ART. XXIII.—Some of the Important Advances Made in Surgical Practice during Recent Years. By HENRY O'NEILL, M.D.; M.Ch.; President of the Ulster Medical Society, and Visiting Surgeon, Belfast Royal Hospital. (*Continued*), - - - - 479

ART. XXIV.—On Hiccough. By W. LANGFORD SYMES, L.R.C.P.I., J.P., &c.; Medical Officer for Kiltegan, - - - - - 488

ART. XXV.—Aneurysm of the Aorta opening into the Left Lung and Pleura. By J. W. MOORE, B.A., M.D., Univ. Dubl.; Censor and V.P., R.C.P.I.; Physician to the Meath Hospital, Dublin; Joint Professor of Medicine, Royal College of Surgeons in Ireland, - 496

PART II.—REVIEWS AND BIBLIOGRAPHICAL NOTICES.

1. Reports from the Laboratory of the Royal College of Physicians, Edinburgh. Edited by J. BATTY TUKE, M.D., and D. NOËL PATON, M.D. Vol. IV., - - - - - - - 499

2. Eye-strain (commonly called Asthenopia). By ERNEST CLARKE, M.D., B.S. (Lond.), - - - - - - 504

PAGE

3. Recent Works on Diseases of Children:—1. Disease in Children: a Manual for Students and Practitioners. By JAMES CARMICHAEL, M.D., F.R.C.P. Ed.; Physician, Royal Hospital for Sick Children; University Lecturer on Disease in Children, Edinburgh. Illustrated with 31 Charts. 2. The Diseases of Children, Medical and Surgical. By HENRY ASHBY, M.D. Lond.; F.R.C.P.; Physician to the General Hospital for Sick Children, Manchester; Lecturer and Examiner in Diseases of Children in the Victoria University; and G. A. WRIGHT, B.A., M.B. Oxon; F.R.C.S. Eng.; Assistant-Surgeon to the Manchester Royal Infirmary, and Surgeon to the Children's Hospital; Corresponding Member of the American Orthopædic Association. Second edition, - - - - - 506
4. Medical Microscopy; a Guide to the Use of the Microscope in Medical Practice. By FRANK J. WETHERED, M.D., - - 508
5. The Australasian Medical Directory and Hand-book, including a General Gazetteer and Road Guide, and Local Medical Directory of Australasia. Edited and compiled by LUDWIG BRUCK. Third edition, corrected up to August 31, 1892, - - - - - 509
6. A Guide to the Examination in Sanitary Science. By HERBERT JONES, D.P.H. Camb., - - - - - - - - 510
7. Diphtheria and allied Pseudo-Membranous Inflammations; a Clinical and Bacteriological Study. By WILLIAM HALLOCK PARK, M.D., - - - - - - - - - 510
8. On Congenital Obliteration of the Bile Ducts. By JOHN THOMSON, M.D., - - - - - - - - - - 511

PART III.—SPECIAL REPORTS.

REPORT ON NERVOUS AND MENTAL DISEASE. By RINGROSE ATKINS, M.A., M.D.; Resident Medical Superintendent, District Lunatic Asylum, Waterford:—

III. Neuro-Pathology and Pathological Anatomy, - - 512
IV. Neuro-Therapeutics, - - - - - - - - 520

PART IV.—MEDICAL MISCELLANY.

ROYAL ACADEMY OF MEDICINE IN IRELAND:—

SECTION OF PATHOLOGY.

Short Notes upon a Case of Traumatic Malignancy requiring Amputation and subsequent Deligation of the Femoral Artery and Vein. By MR. WHEELER, - - - - - - 524
Actinomycosis. By DR. J. A. SCOTT, - - - - - 525
Aneurysm of the Aorta opening into the Left Lung and Pleura. By DR. J. W. MOORE, - - - - - - - 525
Extensive Intestinal Ulceration in "Walking" Typhoid Fever. By DR. J. W. MOORE, - - - - - - - 526
Two Cases of Typhoid Fever, with Cultivations of Typhoid Bacillus. By DR. M'WEENEY, - - - - - - - 526

PAGE

SECTION OF SURGERY.

Estländer's Thermo-plastic Operation. By SIR WILLIAM STOKES, 527

SECTION OF MEDICINE.

Exhibits. By DR. O'CARROLL, - - - - - - 529
President's Address. By DR. WALTER G. SMITH, - - 529
Saturnine Encephalopathy. By DR. O'CARROLL, - - 530

SANITARY AND METEOROLOGICAL NOTES. Compiled by J. W. MOORE, B.A., M.D., Univ. Dubl.; F.R.C.P.I.; F.R. Met. Soc.; Diplomate in State Medicine and ex-Sch. of Trin. Coll. Dubl.:—

Vital Statistics for Four Weeks ending Saturday, November 5, 1892, 534
Meteorology—Abstract of Observations made at Dublin for Month of October, 1892, - - - - - - - 539

PERISCOPE:—

Death of Mr. Michael Fox, L.A.H., Dublin, - - - 498
Professor Unna of Hamburg, - - - - - 523
Alvarenga Prize of the College of Physicians of Philadelphia, - 523
Fictitious Temperature, - - - - - - 533
Hunyadi János Water, - - - - - - 533
Hiccough, - - - - - - - - 533
The Medical Magazine, - - - - - - 544
Bromamide, - - - - - - - 544
Period of Human Gestation, - - - - - 544

INDEX TO THE NINETY-FOURTH VOLUME, - - - - 545

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THE DUBLIN JOURNAL
OF
MEDICAL SCIENCE.

DECEMBER 1, 1892.

PART I.

ORIGINAL COMMUNICATIONS.

◆

ART. XXI.—*The Surgery of To-day.*[a] By EDWARD HAMILTON, M.D.; President of the Royal College of Surgeons in Ireland.

IT is one of the privileges of the office which I have the honour to hold to address a few words to you by way of introduction to the business of our session. My remarks shall be very brief. I have read over the list of papers set down for this meeting's consideration, and I find that they are full of surgical interest; so that your time will be much more profitably spent in discussing them than in listening to empty generalities, or the *crambe repetita* of a formal address. We must be up and doing We must gird ourselves for our work; for it is a self-evident proposition that scientific minds, whatever their pursuit may be, must from the nature of their surroundings be ever in a state of unrest. There is a constant yearning after finality in every department of knowledge—finality which, phantom-like, eludes our grasp and tempts us onward in search of the unknown.

Our special work is no exception. Surgery cannot stand still—there are too many fresh and busy minds coming to the front; too many inventive faculties are straining every nerve to swell the impetuous overwhelming tide of progress.

---

[a] Being the Presidential Address delivered at the opening meeting of the Section of Surgery in the Royal Academy of Medicine in Ireland, on Friday, November 11, 1892.

Having witnessed the changes which surgery has undergone through a long vista of years, I can remember that at hospital on dispensary days four or five patients sat on a long form, each with a tin dish provided with four cups to measure the blood according to the surgeon's prescription, in which not only the quantity of blood was indicated, but also the mode in which it should be drawn. I have often witnessed in a strong, healthy labouring man, struck down with acute pleurisy—bent in two with stitches, shallow breathing, high fever—the instant relief given by the escape of four or five ounces of blood. Seldom was any other treatment resorted to or required.

How can we explain the wonderful difference between this and the practice of to-day? It must be something more than caprice or mere fashion. How is it that plans of treatment so diametrically opposite appear to be followed by the same results? Treatment by the lancet is a matter of history. From that we have plunged into the stimulant treatment so strongly advocated by Todd, and now a reaction has set in against that also. We may ask ourselves has the type of disease undergone a remarkable change, or has the constitution of the human frame become altered by environment, by the influences of civilisation, and devitalising effect of our social system.

The surgery of to-day seems elevated on a tripod of three solid and enduring feet—they are, anæsthetics, antiseptics, and experimental research.

It would be presumption on my part, and waste of your time to address an audience like this on the subject of anæsthetics. Commission after Commission have exhausted discussion on the merits of different materials and the least dangerous mode of administration, so that it remains for the individual to make his own selection. My own conviction is decidedly in favour of ether for adults and chloroform for children.

But I can recall the morning I first saw ether administered. It was by my respected teacher, the late Professor Bevan, for an amputation at Mercer's Hospital. I can easily recall the intense interest with which we watched with bated breath the different stages of anæsthesia as they were developed until unconsciousness and immunity from pain were produced.

The calm and unruffled progress of the operation to its completion, the removal of the patient still sleeping to his bed, the gradual return of mental activity, the joy of the sufferer when told that his limb had been safely removed and his wound dressed—What a contrast to the shrieks and struggles, the hurry to get the operation over and send the poor victim to his bed while a spark of life yet remained! What have I seen since then?

The impetus which the use of antiseptics has given to surgery is self-evident, more especially the boldness with which the cavities of the human body are opened, the contents exposed and dealt with as circumstances demand, and all this with almost perfect immunity from inflammation or other dangers so long the bugbear of operations of this kind. And yet the ground is not so sure; there are even now some sceptics. There is much in the theory and practice which is difficult to understand. The wavering faith in special antiseptic materials, which we were taught to regard with implicit confidence, shakes the belief in the whole system.

Fresh in my memory are the words of De Morgan, as he personally urged me to wash all operation wounds with Burnett's solution, and thus, without any knowledge of the germ theory, he covered the surface with a protective film, and handed down to us a practice of inestimable value—a great help to the modern antiseptic methods.

I have seen Mr. Lister of that period apply his antiseptic putty and tin-foil in the wards of the Richmond Hospital. Since then I have seen those infant facts of science develop into the giants of to-day.

That experimental research is an important element in the advancement and certitude of surgical knowledge cannot for a moment be questioned. The substitution of actual facts for theory, the evidence of our senses for the mists of imagination—how many errors have been corrected, what a flood of light has been thrown upon the mysteries of nature, by the study of her actual working illuminated by an intelligent mind!

We need no further proof of the value of this mode of research than the recent advances which have been made in the surgery of the brain. Where all was dim conjecture and uncertainty we now require only the simple exercise of reason. Symptoms read by this light now express in the plainest manner the actual area of the brain which is affected, and the surgeon, no longer poking in the dark, can now plan the steps of his operation with mathematical precision, and with confidence proceed to remove the tumour, blood, or pus which is paralysing its functions.

And perhaps here we may feel that *we* have not done as much as we could have wished in this important and attractive field of work; but there are sufficient reasons why this has been so. Work of this kind demands much self-sacrifice, much expenditure of time and, to put it plainly, of money—and in Ireland we have not these fiscal endowments which make it worth a young man's while to forego more lucrative work and devote himself to abstract science. It is an unpleasant fact that scientific chivalry does not pay in Dublin. We must not repine, however, but we must make the best use of such means as we possess. I am proud to say that we have now amongst us a band of young and devoted workers full of ardour and enthusiasm in this direction, willing to toil for the sake of the brilliant results which are sure to follow, and I have no doubt they will elevate the prestige of the Irish school of surgery by advanced and independent research.

All honour to those who by patient thought, by careful experiment, and the truthful record of actual facts, have given to anatomy a higher value, and raised it above physical drudgery and the mere mechanical exercise of the memory. Anatomy as applied to the investigation of function has made much progress and is well worth a careful and patient study, as the only structure on which sound physiology can rest. It is the fashion now to disparage the study of anatomy and to regard the time spent in its pursuit as wasted—that it does not help us in actual practice, and is soon forgotten—hence the tendency to cut it out more and more from our curricula. The development of new subjects has fostered this idea. But we must not forget the training which anatomy gives to the mind, and the fact that surgery is so easily grafted on to it. Another cause has retarded the advance of experimental research, the irritating and vexatious requirements of the Cruelty to Animals Act, with its license of place and person, and its six varieties of red tape certificates. This so-called amended Act stands on the statute book of the British Constitution an insult to an educated and refined profession, branding its members as wretches who take a vulgar delight in torture, and require to be licensed like cabmen or the sellers of beer—a millstone about the neck of those who would work by the only method of any real value—the demonstration of physiological fact by observation made on the living animal—driving them to study in other countries more liberal and enlightened in their views of what science demands

This question of experimental research has come very much to the front in the present day, and has been attacked with much rancour and overheated debate. Even in our own city, at the recent Tercentenary of Trinity College, Dublin, an attempt was made to assert the principle that no one engaged in this special kind of study was worthy of any academic distinction.

It is ludicrous to read the violent invective which has taken the place of argument in this controversy. One dignitary of the Church has denounced his fellow-Christians who practise this form of research as "inhuman devils," and their search after truth "abominable sin."

It is evidence of a weak cause when they ridicule as "sport" the careful study and anxious investigation of men of science, and to find no parallel for their methods better than the harrowing agony depicted in the nine circles of Dante's Hell.

I have no hesitation in pronouncing my own opinion. I do not pledge you to it. I do not pledge this Academy to it. I do not pledge this College to it. But I fearlessly proclaim my individual opinion that if, by the opening of the chest of a living animal, the heart was seen to contract and dilate, the blood alternately leaving and returning to it, and by this observation Harvey was enabled to forge the final link in the chain of proof as to the circulation of the blood—I say, if this fact was established by so-called vivisection, it is worth all the dogs that ever howled on the face of the earth.

We must not be carried away by too roseate a view of surgical progress, or plume ourselves too much on our achievements. Facts which we cannot ignore must "give us pause."

What progress has surgery made in the treatment of cancer, tubercle, syphilis? I venture to say simply none. As to cancer, we have, no doubt, done much towards developing its pathological history, its microscopic anatomy, its relation to normal tissues, and we have learned to differentiate varieties of the disease; but are we better able to diagnosticate or cure a malignant growth than the Cusacks, Colles, Porters, or Smiths who have lived before us? I think not. The disease is still hopelessly incurable, an opprobrium of surgery, the happy hunting-ground of quacks and charlatans.

In our treatment we, no doubt, emphasise the value of early operation—the importance of removing all infected glands, and we have gone a step further in the removal of all glands from the vicinity of cancer while they are yet perfectly healthy, that they may not be left in the path of the lymphatics to receive contamination through them. And yet, with all our care and boldness in the use of the knife, is it not a melancholy reflection how many of these cases return either locally or remotely. Our workhouse hospitals are full of such cases which have been paraded in our medical journals as cures. It may be fairly questioned whether those growths which do not return were ever cancer at all.

What progress has modern surgery made in the treatment of tubercle? My answer is that since the writings of Lugol it has made little or none. As in the case of cancer, we have done all that the microscope can do. We have exhausted the efforts of organic chemistry, we have demonstrated its microbe, we now remove strumous glands with greater promptitude and freedom, and thus we shorten the period of prolonged suppuration. With the aid of antiseptics we scrape tuberculous ulcers, but the diathesis which has produced them still remains to deposit fresh tubercle and invade remote parts of the body.

The time is not far distant when portions of diseased lung will be removed by surgical operation. Vomicæ will be scraped or excised; tubercle at its earliest formation will be destroyed. No doubt the difficulties to be encountered will be very great, but they are not insurmountable—viewed by the light of surgical progress. The unceasing movement of the thoracic cavity, the intense vascularity of the contained organs, must ever be a source of difficulty and danger; but the hand of the surgeon, guided by the surgeon's mind, has achieved more than this. Whether those bold ventures will be followed by a cure of lung consumption the future alone can tell. We all know the wild excitement which seized the profession and the public, almost amounting to phrenzy, when the announcement was made that Koch had discovered a cure for this terrible scourge of humanity, which so frequently cuts away the fairest and most lovely of our sisters. The stampede to Berlin, as in sober earnest we recall the picture, was simply laughable. No doubt, this was mainly brought about by the scientific attainments, the character for honest and truthful work of the exponent of the new departure; but how sadly disappointing the result has been.

The treatment of syphilis has made little or no progress since Hunter proclaimed the dogma—"If there is such a thing as a specific at all, mercury is a specific for this venereal disease." Those who have widely studied the natural history of the disease must have come to the conclusion that it is a struggle between the constitution and a specific poison which occurs in paroxysms or waves, and that as a rule the constitution if carefully trained and nursed will triumph and expel the invader, and what shall I say of the use of mercury—that two-edged sword so powerful for good or evil. This I will say as the result of long uninterrupted observation—that there are two abuses of this potent agency. There is the terrible overdosage which is now, thanks to the mastermind of Carmichael, a matter of history, and there is the timid and vacillating use of the remedy carried on for months and years, which is the fashion of the present day, leaving it off as it is about to produce good results.

How often have I seen it laid aside when a hard chancre began to soften and expand under its beneficial use. The surgeon throwing down the claymore, and running away from it.

This apparent extension of the ulcer, the first step in its improvement, is too often regarded as the advent of the dreaded phagedæna which has haunted the mind of the inexperienced practitioner. We have learned the immense value of hygienic treatment—good air, good food, early hours, temperance in all things, the Turkish bath, with the blood-making property of cod-liver oil. These give the constitution a better chance.

I have no doubt whatever that the disease is fading away, and losing its intensity day by day—although we now and then meet with cases which resist all treatment; fresh symptoms arising time after time until the constitution becomes vanquished in the fatal struggle. Thus we find that there is "amply verge and room enough for work" to occupy our hands and our minds, and I trust the present session will prove that we have not retrograded, and that the spirit of the old Surgical Society of Ireland is still alive,active, and enduring.

I trust our debates will be carried on regardless of personal self-interest, with one common object—the advancement of surgery.

I cannot close this address without alluding to the loss which the Academy has sustained by the death of William Colles—a name cherished wherever the science of surgery is cultivated. Himself revered in his native city, and beloved by all his professional brethren, wise, sagacious, calm and modest in his demeanour. The Council of the College has lost a Nestor—I myself have lost a guide, philosopher, and friend.

ART. XXII.—*On the Physical Signs of Pleural Effusion.*[a] By DAVID DRUMMOND, M.D.; Physician to the Royal Infirmary, &c., &c.

IT was originally my intention, when asked to introduce a subject for discussion, to address myself generally to what I can only call the overwhelming importance of physical signs in relation to diagnosis; to urge upon those interested in teaching and examining a closer attention to their investigation; and to press their claim upon practitioners as deserving more care and consideration than are usually bestowed upon them. But it occurred to me that if I confined myself to a few points, the importance of which, I suspect, is insufficiently appreciated, that my remarks might have greater practical interest, particularly as the time at my disposal is limited.

In my opinion it is impossible to over-estimate the value of physical signs. It would not be far wrong to say that practical medicine, so far at least as the beginner is concerned, is supported on four legs—anatomy, physiology, *post-mortem* work, and physical signs.

Do not let me be misunderstood: it is far from my intention to underrate *symptomatology*, and what I may call *history*, in relation to diagnosis, which is really the business, *par excellence*, of practical men like ourselves. But I have not the slightest hesitation in saying that, in my experience, the great cause of failure in diagnosis has been due, to either a want of knowledge of, or an indifference to, physical signs. They are not searched for, and when they have been discovered they are too often misunderstood, because in previous cases of similar nature they were neglected.

We have all experienced great difficulty at times in distinguishing between consolidated lung and pleural effusion. This difficulty will, I think, be found to vanish in a surprising manner if we give attention to the signs peculiar to the two conditions. First let us consider for a moment how it happens that one is so often mistaken for the other; unfortunately, our text-books have contributed largely to the reigning confusion. I think that it will be admitted that the usual book statement, with which we are all familiar, is to the effect that pleural effusion is to be recognised by dulness on percussion, diminution or absence of breath sounds, and diminished vocal resonance and fremitus; and on the other hand, consolidation is marked by dulness on percussion, tubular breathing, and exaggerated vocal fremitus.

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[a] The substance of an Address delivered before the Newcastle-on-Tyne Clinical Society.

Now, I may, possibly, be stating what is already known to all present, but even if that be so I make no apology, for it is news to some of our text-book writers, when I say that for a certain period in the history of almost every pleural effusion, and even when the collection of fluid may be regarded as large, there is decided tubular breathing, and the vocal sounds are markedly pectoriloquous. On the other hand, in many cases of pneumonia (two have come under my notice within the past week), the breath sounds are entirely absent, and the vocal fremitus and voice sounds are damped down to a minimum.

I do not, of course, deny that in the majority of cases of pneumonia the signs are tubular breathing and exaggerated vocal fremitus, nor do I question for a moment the accuracy of the statement of the text-books—that the classical signs of effusion are absence of breath and vocal sounds, with of course diminished fremitus, when applied to a certain stage of most effusions—*i.e.*, after the collection has existed for some time—it may be weeks. But I repeat, the rule is to have tubular breathing during the earlier stages of the effusion, and I have met with it even when the dulness had ascended as high as the clavicle.

I may say that I was made aware of this fact by the frequent use of the hypodermic needle, employed as an explorer, for in common with the majority I was formerly under the impression that tubular or bronchial breathing was in itself sufficient to justify the diagnosis of consolidation as opposed to fluid. Although it will scarcely be necessary to point out the importance of distinguishing between fluid and solid, I may remind members in passing that a chronic consolidation often means a tubercular condition, and an effusion following on pneumonia an empyema.

If then the two conditions have so much in common, if there be so much overlapping, how can we differentiate? By attending to the physical signs. First let us deal with the percussion note. I am afraid it is too much our habit to regard *dulness* as an abstract or definite term, instead of possessing, as it does, a purely relative significance, indicating an alteration in the quality of the tone, but nothing more. Now there is usually to be detected a very marked difference between the dulness of pneumonia and the flat toneless sound elicited on percussing a collection of fluid encased within the ribs. The former will be found to possess a certain degree of resonance, while the latter is usually devoid of it. The former may very accurately be imitated by percussing the finger laid on a piece of paper, folded double, and placed on the thigh; whilst the latter resembles the note produced by percussing the finger laid directly on the thigh without any paper intervening. Not only is the note flat and toneless in the case of fluid, but the sense of resistance is markedly increased, another sign of importance. There are a few modifications of the dulness of pneumonia that are striking, and one or two are eminently characteristic. I refer chiefly to the peculiar tympanitic dulness, having some resemblance to the note elicited above the fluid in some cases of pleurisy, known as Skodaic resonance, to which I have ventured to apply the term "apple note." This note, which can be imitated by percussing a large apple, may often be rung out from a basic pneumonia, and possesses great diagnostic importance, partly because it is so unlike the dulness of fluid, but chiefly because it is apt to be present in pneumonic consolidation, attended by absence of or diminution in the breath and vocal sounds and fremitus. In other words, this "apple" dulness will frequently guide us to a correct diagnosis in cases that are otherwise likely to be confounded. Then the discovery of the hyper-resonant note (Skodaic resonance) above the fluid in front, is a great help. True, the same modified resonance can sometimes be demonstrated above consolidated lung, but it is unobtrusive and may be neglected. The distribution of the dulness is carefully to be made out, for much valuable aid is to be derived from observing its limits, though chiefly when the lesion is on the left side. I refer to the fact that large effusions on the left side render the portion of the chest wall known as Traube's space, absolutely dull; whereas in health, or when consolidation is present, percussion of this area furnishes a tympanitic note, borrowed from the adjacent stomach and intestine. This sign is of so great importance that I may be pardoned if I refer more in detail to the anatomical relations of this particular space. It is situated below and to the outside of the left nipple, and may be said to be bounded below by the margin of the ribs, and above by a curved line passing from the sixth costal cartilage to the tenth rib about the posterior axillary line, forming a semilunar space that may be covered conveniently in the adult by a small hand; its greatest breadth is about four inches. Here then we have normally, or in pneumonia, a hollow tympanitic note, but in cases of large effusion the note is flat and toneless. The explanation of the change is, of course, to be found in the fact that a large collection of fluid pushes the diaphragm away from the chest wall, and with it the hollow viscera lying beneath it. This I have demonstrated to the class in the *post-mortem* room by filling a healthy left pleura with water, and then opening the abdomen, when the diaphragm could be seen to bulge down like a child's balloon in the neighbourhood of the spleen and cardiac end of stomach.

I now pass on to the auscultatory signs of pleurisy with effusion. Here we are at once met with the difficulty, already referred to, that the teaching scarcely agrees with the practice, for but few of our text-books recognise the fact that, as interpreted by the stethoscope, the physical signs of pleural effusion may resemble very closely those of solid lung. It is chiefly to this point that I desire to direct attention, for it is perhaps the most striking illustration of the way in which an important condition is overlooked or mistaken by want of attention to physical signs. Even after our attention has been called to the character of the breath-sounds in effusion, it is by no means easy to recognise them when again met with; but careful examination will enable the observer, after a little practice, to appreciate their value. The difficulty lies in the fact that the fundamental alteration in the breath-sounds during the earlier part of the illness—that is, during the period when fluid may really be confounded with solid—is in the direction of tubularity. For, as already remarked, tubular breathing is a feature of nearly every collection of fluid in the pleural cavity, up to a certain point. The fact is, fluid, even pus, is a fairly good conductor of sound, and, as it collects, so long as the larger divisions of bronchi remain patent, and the side expands sufficiently to draw air into these tubes, the fluid simply serves to obliterate the spongy part of the lung, and thus to cancel the cause at work in changing the tubular sound generated in the larynx and trachea into the soft, so-called, vesicular murmur. It is true that no sooner have the larger divisions of bronchi become compressed than tubular breathing is abolished, and the classical "diminution or absence of breath-sounds" is established. But at this stage there can be little doubt as to the nature of the condition; the displaced heart, the obliteration of the resonance of Traube's space, the absolutely toneless note, and the marked diminution in the fremitus can leave no room for doubt. We want, indeed, to recognise the presence of fluid (particularly pus) at an earlier period of the illness, and to this end we are aided by the character of the tubular breathing. I will at once admit that it requires a good deal of practice to discriminate between the tubular breathing of fluid and solid, but I maintain that it can be done, and when taken in conjunction with other signs, the diagnosis may be regarded as fairly certain. It may be premised that the term "tubular or bronchial breathing" is employed in clinical medicine to cover a variety of sounds all having a more or less striking resemblance to the sound produced in a tube when air is blown or drawn through it, such as the sounds audible over the larynx, trachea, or primary divisions of the bronchial tubes. I say that there are many varieties of bronchial breathing, and no two cases of pneumonic consolidation are exactly alike in tone, pitch, loudness, &c., and the quality of the sound will vary in different parts of the same chest. So it is with the tubular breathing of fluid. Hence it is more than difficult to give an intelligible description of the distinctions to be drawn between the physical signs of fluid and solid. The following points set out in the clinical note of a case in which one of the pleural cavities contained fluid whilst the opposite lung was solid (pneumonia) are, however, worthy of attention. Over both sides the breathing, as detected by the binaural stethoscope, was distinctly tubular. Over the solid lung the sounds (inspiration and expiration) were, so to speak, more decidedly tubular than over the fluid, and the inspiration showed this character in particular as compared with the fluid side, for the inspiration of the latter was more of a subtubular or puerile character than decidedly tubular. On the other hand the expiration of the fluid side was markedly tubular, but it was shorter and more *sighing* than the expiration of the solid lung. The breath sounds of the solid side were nearer, more definite (less indeterminate), and decidedly harsher than those of the fluid; whilst the latter were higher pitched, more distant, softer, and more sighing. The tubular breathing on the fluid side could be readily imitated by making a sighing inspiratory and expiratory noise with the larynx, with the mouth open, and that on the solid by making a tubular sound with the lips protruded. The chief points by which a distinction can be made are: 1st, the general character of the tubular breathing—fluid is sighing, solid is harsher and more hollow; 2nd, the inspiratory sound of fluid is sub-tubular, of solid it is decidedly tubular;

3rd, the sustained expiratory sound of fluid is shorter than that of solid, and it dies away more gradually; 4th, the sounds of solid are nearer to the ear, those of fluid more distant and aerial.

I have often asked myself the question, "Why do the majority of our old standard text-books give an erroneous impression of the auscultatory signs of pleural effusion?" "Why do they recognise the tubularity so characteristic of pneumonic consolidation, and fail to note that of pleural effusion?" The answer to this question will be found, I think, in the fact that until the hypodermic needle became frequently employed in bedside diagnosis a large number of cases of fluid were mistaken for solid, and the lines upon which the diagnosis was made were necessarily more or less imperfect. And also it must not be forgotten that at times the tubular breathing of fluid with its low intensity can with difficulty be detected with the single stethoscope, indeed in many cases it is almost inaudible; therefore, until the employment of the double tube became general, and was understood, little or no advance could be made in this department of auscultation.

The vocal sounds in pleural effusion, so long as the tubes are patent and the breath-sounds are tubular, bear an unfortunate resemblance to those of pneumonic consolidation. Here again, however, attention to detail will often enable the auscultator to differentiate. In the case of solid lung the voice when raised up to or beyond the pitch of ordinary speaking is loud and more or less distinctly heard, though it is somewhat masked by harsh sonorous vibrations (bronchophony). When fluid is present, on the other hand, the voice is still loud, though more distinct, and is to a great extent free from the buzzing or murmuring resonance of pneumonia, and it may be bleating or ægophonic. When the voice is lowered to a sibilant whisper pectoriloquy is very distinct when fluid is present—the clear, small voice seeming to enter the bell of the stethoscope direct from the chest. In pneumonia the whispered voice is also audible, but it is not quite devoid of the bronchophonic characteristic, and therefore is less distinct; in other words, the pectoriloquous character is not so pronounced.

I now come to what I may call the unequivocal signs of pleural effusion. Hitherto experience has played an important part in interpreting signs in a marked degree common to both fluid and solid, but now a fairly broad line serves to divide one from the other. These are so well known that they can be dismissed with a few words. The vibrations of the chest-wall, detected by the hand when the patient is speaking—vocal fremitus—serve a very useful purpose in diagnosis. The exaggerated fremitus of pneumonia forms a striking contrast to the issue in the case of fluid, when the fremitus is either lost or diminished. It must not, however, be forgotten, that when the tubes are blocked in pneumonic or other consolidation, the fremitus is almost entirely abolished—a state of things that leads often to marked confusion.

Displacement of the heart's impulse is of immense value as a sign of pleural effusion. The heart, of course, is drawn over to the sound side by the healthy lung, and the displacement may be very considerable, particularly if the effusion be on the left side. This sign alone will often turn the balance of opinion in favour of fluid in a doubtful case, and should be sought for in every instance.

Notwithstanding the most careful examination, the case may still be doubtful, and then that most valuable of diagnostic instruments, the exploring hypodermic needle, must be appealed to. With strict antiseptic precautions the needle may be introduced without any risk, and, moreover, if the point be sharp the pain is exceedingly slight. I have the greatest confidence in urging the more frequent use of the needle, for not only does it serve to clear up cases of difficulty, and therefore is invaluable at times, but it is an important factor in our clinical education, particularly in clinical teaching, for its information impresses the mind of the student, as well, indeed, as that of the teacher, with the true value of physical signs freshly elicited.

ART. XXIII.—*Some of the Important Advances Made in Surgical Practice during Recent Years.*[a] By HENRY O'NEILL, M.D., M.Ch.; President of the Ulster Medical Society, and Visiting Surgeon, Belfast Royal Hospital.

(Continued from page 403.)

NECESSARY DETAILS TO BE STRICTLY OBSERVED IN THE TREATMENT OF WOUNDS SO AS TO SECURE IMMEDIATE UNION.

COMPLETE ASEPSIS.

(1.) The strictest antiseptic precautions are necessary to secure absolute asepsis. Antiseptic measures are employed for rendering the wound and everything that is brought in contact with it in a thoroughly aseptic state. The thorough removal of micro-organisms from the seat of operation is the surgeon's first duty, and this is accomplished by shaving and washing with soap and warm water, turpentine, ether, and alcohol, then disinfecting the parts with a germicidal solution, such as a 5 per cent. carbolic acid solution, or 1 in 1,000 solution of corrosive sublimate. Sir Joseph Lister has lately recommended a weak solution of double cyanide of mercury and zinc, in preference to carbolic acid, as it appears this germicide exerts an inhibitory effect upon microbes which still remain in the wound or its neighbourhood which prevents them from multiplying in the tissues or in the dressings. The hands of the operator and his assistants should be purified by washing and brushing them in warm water and soap, and then with corrosive sublimate solution 1 in 1,000, or carbolic acid solution 1 in 40, and lastly, in alcohol. The parts beneath the finger nails require to be well brushed.

(2.) On each side of the wound, or part to be operated on, a towel wrung out of an antiseptic solution should be spread evenly, so that while operating the instruments and sponges will not be in contact with septic clothing, or the surface of the body. Sterilised sponges or aseptic lint or gauze alone should be used. The patient should be laid on a dry linen sheet, and covered with a similar sheet, except over the parts to be operated on.

(3.) The instruments should be steel, with metal handles, nickel-plated, so that they can be readily boiled in clean water, or with 1 per cent. bicarbonate of sodium added to the water.

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[a] Inaugural Address, delivered before the Members of the Ulster Medical Society, Belfast, on the 4th of November, 1891, at the opening of the Session of 1891-92.

ARREST OF HÆMORRHAGE.

(4.) All bleeding should be carefully arrested, as blood clot (1) separates the edges of the wound, (2) becomes a medium in which micro-organisms can grow readily, (3) gives rise to tension and pain. Therefore the careful arrest of hæmorrhage is of the first importance in the rapid healing of a wound.

ACCURATE SUTURING.

(5.) The best results in surgery follow the operator who is painstaking in following out the minutest details. In the treatment of wounds, the surgeon's duty is not only to unite the surfaces of wounds accurately and neatly, but to unite when necessary tissues of the same anatomical and physiological function. Divided nerves, tendons, muscles, fascia must be separately united with buried sutures before the wound is closed by the usual interrupted suture. When several nerves or tendons are divided in the same wounds, as in extensive wounds of the forearm, great care must be taken to join the ends of the same nerve or tendon. Buried sutures are absolutely necessary where accurate apposition of a deep wound is required. Catgut or silk is best for sutures. The bandage to retain an absorbent antiseptic dressing should be applied firmly and evenly so as to make uniform compression, and afford support to the injured vessels and tissues.

PHYSIOLOGICAL REST.

(6.) In the after treatment of a wound it is of the utmost importance to keep the parts completely at rest. The injured part must be kept in such a position as will permit of a proper blood supply, and prevent passive congestion. A wound properly dressed should not be disturbed until it has united. If pain, rise of temperature, or saturation of the dressings with discharge has not arisen the first dressing should remain undisturbed from one to three weeks. In wounds of the intestines rest is secured by abstinence from food. In wounds of the bladder distension of the organ is prevented by the introduction and retention of a catheter. In wounds of the brain rest is secured by keeping the room dark and quiet.

Amongst the advances made in surgery during recent years the suturing of wounded nerves holds a foremost place.

PRIMARY NERVE SUTURE

Was first performed by Baudens in 1836, but not successfully, by Nélaton in 1863, and by Langier in 1864. At first the silk sutures were left long, and afterwards came away by suppuration. This was a tedious and unsatisfactory method. O. Weber recommends the passing of the sutures through areolar tissue surrounding the nerve—the paraneurotic suture. In small nerves this method may be sufficient, but in large nerves sutures can be passed quite safely through the substance of the nerve as well as through its sheath. I have had three cases where after extensive wounds in the forearm, followed by paralysis of the parts beyond the injury, the median nerve, having been completely cut across, was carefully sutured, and in about six weeks afterwards the functions of the nerve were restored, and the three patients (a baker, a mechanic, and a housekeeper) can perform all their duties quite well. Fine chromicised catgut, carbolised, was used by me in each of the cases, but fine silk, sterilised, is equally good.

SECONDARY NERVE SUTURE

Was first performed by Nélaton in 1865. After extensive wounds, when the cut nerves do not unite, the ends become bulbous and the distal end of the nerve undergoes degeneration, and the muscles supplied by it become wasted and useless. Both ends must be freed from all cicatricial adhesions before approximation is attempted; and if this cannot be easily accomplished because of the retraction both ends must be carefully stretched, so that there may be sufficient elongation obtained to permit the ends to remain after suturing without tension on the suture. The limb should be kept flexed. In case the ends are separated two inches or more, the ends should be vivified and a nerve of a similar size from a rabbit transplanted between them.

As a result of the careful aseptic treatment of wounds important operations can now be undertaken and successfully performed in regions which were looked upon by the older surgeons as entirely outside the range of surgical operations.

SURGERY OF THE BRAIN AND SPINAL CORD.

Injuries to and diseases of the brain and membranes have at all times been of the greatest importance to surgeons, but, until recently, treatment was chiefly directed to the injuries of the superficial parts. *Post-mortem* examination often showed that many cerebral lesions could have readily been reached and treated by operation had the surgeon known how to locate them. Until 1870 there were two chief obstacles to the advance of cerebral surgery. First, inflammatory action so often followed intra-cranial operations, and frequently ended fatally. Second, the brain was a region little known, and few signs were understood which would show the diseased area. From 1870 Lister showed by the antiseptic treatment of wounds that immediate healing was the rule without suppuration, and head wounds were no exception. Broca, in 1861, by careful observations was able to locate a limited area as the seat of the faculty of speech. Many observers were working diligently in the same field, and in 1870 Fritsch and Hitzig published an account of their observations. They clearly demonstrated the presence of a series of circumscribed areas on the surface of certain of the cerebral convolutions, the electrical stimulation of which caused on the opposite side of the body co-ordinated movements in distinct groups of muscles. Ferrier and Horsley have greatly extended the study of this subject by their careful clinical and pathological observations on patients, and by experiments on monkeys and other animals. So that now there is established beyond any doubt the existence of certain parts in the human cortex cerebri intimately connected with the motor and sensory functions of certain parts of the body. The first obstacle to the treatment of cerebral wounds—viz., suppuration—has been removed since the introduction and adoption by surgeons generally of Lister's antiseptic treatment of wounds. The second obstacle has been removed by the labours of Fritsch, Hitzig, Ferrier, Horsley, and many others, who have demonstrated the presence of distinct motor and sensory areas in the cortex of the cerebrum.

In the parietal region grouped round the fissure of Rolando are the areas connected with movements of the opposite side of the body, and at the lower end of the fissure those related to movements of the mouth and tongue. In the study of cranio-cerebral topography the surgeon has to rely on four primary landmarks in establishing a system of measurements.

1st. The glabella or root of the nose, which bears a definite relation to the anterior limit of the cranial cavity.

2nd. The occipital protuberance, which bears a similar relation [illegible] corresponding to the junction of the falx with the tentorium.

The [illegible] is disposed between these two [illegible] to its cortical matter [illegible] of the bones forming the vault.

3rd landmark is the external angular process of the frontal
which bears a relation to the lateral expansion of the frontal
similar to that borne by the glabella and occipital protuber-
to the anterior and posterior extremities of the cerebrum. It
lso a uniform relation to the fissure of Sylvius.

h, and lastly. The parietal eminence marks the greatest
ral expansion of the substance of the hemisphere, and bears a
ial relation to the submarginal convolution.

he operative treatment of cerebral lesions requires an accurate
gnosis by means of cerebral localisation, and a careful study of
e clinical and ætiological aspects of the case. If an abscess
velops in the brain after a fracture has healed, or a tumour
rows in the motor region round the fissure of Rolando, the skull
ust be opened at a point over the abscess or tumour. By means
of accurate measurements, which are given in all text-books on brain surgery, the motor centre or centres affected by the lesion are marked on the shaved and disinfected scalp before the skull is exposed, and the exact position of the lesion is also marked on the skull by making a puncture through the scalp with a small perforator, so that the position can be recognised after the soft parts have been reflected. The bone is exposed at this point by a horseshoe shaped incision, the convexity of which is directed upwards. The flap, with the periosteum attached, is turned downwards. After all hæmorrhage has been arrested the skull is opened, either by using a trephine or a chisel. The circle or chip of bone removed is placed in a warm antiseptic solution to be reimplanted if required. If the dura mater is tense and bulges into the opening, and cerebral pulsations are feeble or wanting, the skull has been opened near or just over the tumour or abscess. The brain can now be carefully explored in different directions with a fine hollow aseptic needle with safety. An ordinary exploring syringe, with a fine needle about 4 inches long, is best suited for the purpose. When an abscess has been found the needle is used as a guide for a small pair of torsion forceps, which is pushed along its side until the abscess has been reached, the blades slightly opened and withdrawn, and a fine drainage tube passed along the track to the abscess cavity. After the abscess has been opened and drained it
be carefully syringed with a 2 per cent. boric acid solu-
bone chips are reinserted in the trephine woun
tube should be inserted in the most dependent
l. The flap is now secured by sutures of sterilis

catgut, or horsehair. The drainage tube should not be removed until the abscess cavity is closed.

In patients suffering from severe forms of epilepsy, where the usual methods of medicinal treatment have been tried in vain, trephining the skull has been found useful in a certain number of cases, especially in those cases in which the signs pointed to the pressure of a tumour, or abscess, or depressed bone over the motor areas. This method of treatment is a decided step in advance. During the past two and a half years I have successfully trephined the skulls of four patients, each suffering from a compound depressed fracture of the skull. One patient was a man aged 45 years, who suffered from dementia, caused by the pressure of a depressed fracture of the skull. Two weeks after trephining the skull and elevating the depressed bone, and reimplanting the bone which was removed by the trephine, he became quite sane, and has remained well ever since. He is now attending his usual work. Another patient was a boy aged 14 years, in which the depressed fracture was just above the left parietal eminence, and was caused by the stab of a knife. He suffered from aphasia and hemiplegia of the right arm, leg, side of face, and tongue. After trephining the skull and elevating the depressed fracture, hernia cerebri formed, and about four ounces of brain substance escaped. He made a good recovery, and 2½ months after the operation he could walk about. He has kept well since, merely showing evidence of less intelligence than before the injury. The remaining two cases made good recoveries. In all the cases the wounds had firmly healed, and the patients were able to return to their duties in about four months after trephining.

SURGICAL TREATMENT OF LESIONS OF THE SPINAL CORD.

The operation of trephining the spine for the relief of pain or motor or sensory paralysis caused by pressure on the cord has been practised since Heister, in 1757, first recommended it, although at that time and for a long time after the operation was condemned by most surgeons. Heister (General System of Surgery, 6th edition, 1757, p. 140), says: "But to offer the patient no assistance because we despair, would seem cruel and uncharitable; therefore we must try our skill, though our attempts should be in vain, in order to which the surgeon must lay bare the fractured vertebræ with a scalpel, and replace or else remove such fragments as injured the spinal marrow." Mr. Herbert Page, in Heath's

"Dictionary of Surgery," page 134, 1881, referring to the treatment of fracture of the spine, says: "The operation of trephining the spine proposed many years ago and adopted several times has made no progress in surgery, nor is it likely to do so. It is an operation not within the range of practical surgery." Mr. Erichsen, in the last edition of his "Surgery," says: "The operation is not necessarily dangerous, it does not appear often to have hastened death, and has certainly in some cases afforded relief." The operation has been generally objected to because of—

1. Hæmorrhage.
2. Difficulty in clearing the neural canal.
3. Physical difficulties of treating the fractured vertebræ.
4. The hopeless nature of the damage of the spinal cord.
5. Septic infection.

By carefully making an incision along the spinous processes over the seat of injury or lesion, and separating the soft parts from them and the laminæ by a scalpel and retractors, the hæmorrhage can be easily arrested by torsion forceps and sponges, and the spine and lamina removed by strong cutting bone forceps, chisel, and fine saw. The spinal cord can be examined, and if pressed upon by bone, blood clot, an abscess, or a tumour, treatment may be successfully adopted, and the pressure removed from the cord. Should the cord be completely cut across, then we may possibly do some good, and certainly if proper precautions are taken to keep the wound strictly aseptic we can do no harm.

On the 9th of June, 1887, Mr. Victor Horsley, of London, successfully removed a tumour from the spinal cord of a captain, aged 45 years. The tumour, which was about the size and shape of an almond, was attached by its lower end to the highest root of the left fourth dorsal nerve, and rested upon the left lateral column and posterior root zone of the spinal cord. The patient had been suffering from the effects of the pressure of the tumour on the cord for over three years. At first the patient complained of paroxysms of great pain in the lower limbs and abdomen, and for four months previous to the operation he had complete motor paralysis of both legs, and loss of sensation as high as the ensiform cartilage. The patient made a good recovery after the operation, and on the 24th of January, 1888, he was shown to the members of the Medico-Chirurgical Society of London. He could then walk three miles with ease. This was one of the first recorded cases in which a tumour involving the spinal cord was exposed and successfully removed by operation. (See full report of this case published in Vol. LXXI., *Medico-Chirurgical Transactions*, London, 1888.)

Dr. W. MacEwen, of Glasgow, in 1888, published (*British Medical Journal*, 1888, Vol. II., p. 309) the results of six cases in which trephining of the posterior laminæ of the vertebræ had been performed by him. Four had completely recovered and two had died, one from extension of tubercular disease months after the operation and after the wound had healed, leaving one in which the operation possibly hastened the death of the patient, who was otherwise in a painfully helpless and hopeless condition.

There is no special liability to septic infection in wounds of the region of the vertebræ, and by careful aseptic treatment and drainage it can be prevented. Recently (September 19th, 1891), a patient, John D——, aged 40, labourer, was admitted to the Belfast Royal Hospital suffering from complete loss of power of motion, and sensation of both legs and the lower part of the body from about an inch below the level of the crest of the ilia, with loss of control of the sphincters of the rectum and bladder. The paralysis was produced by a fracture-dislocation of the last dorsal vertebra caused by a bank of earth falling on him while he was in a stooping position. The paralysis followed immediately after the accident, which had occurred 11 weeks previous to his admission to the hospital. A bedsore had formed about the size of a crown piece over the lower end of the sacrum, otherwise he was in good health. As the patient was in a helpless state, without much hope of recovery, except by operation, and after consultation with Drs. Cuming, Wheeler, and Logan, and having received the consent of the patient and his friends, I, assisted by these gentlemen, on 23rd September last, removed the spines and laminæ of the 11th and 12th dorsal and 1st lumbar vertebræ, and exposed the spinal cord, which we found completely cut across opposite the body of the 12th dorsal vertebra, and united again by areolar tissue. The wound healed in eight days. The patient states he feels less pain in his back and less discomfort than before the operation. The paralysis of the limbs remains as before. The superficial reflexes remain normal. Still the operation was justifiable, even though the spinal cord was found completely severed, and the patient has the satisfaction of knowing the exact condition of the injured parts and the hope he has for the future. He left hospital, October 14th, much relieved by the operation.

The conclusions to be arrived at in considering the facts demonstrated by the foregoing cases are quite clear—namely, when a correct diagnosis is made, the proper treatment to adopt is to remove by early operation the cause of the pressure on the spinal cord—whether bone, tumour, or abscess.

ABDOMINAL SURGERY.

Until the advent of the aseptic treatment of wounds the treatment of abdominal diseases was generally regarded as the special privilege of the physician. But by the labours of Spencer Wells, Keith, MacCormac, Tait, Bantock, Thornton, Mayo Robson, Greig Smith, Senn, and many others, such diseases as intestinal obstruction, suppurative peritonitis, cancer of the stomach and intestines, obstructed gall duct, renal abscess or calculus, ovarian and uterine tumours, can now be successfully treated by the surgeon. By adopting strictly aseptic methods the surgeon can now open the abdomen, confirm or disprove the previous diagnosis, and in suitable cases operate for the relief of such diseases as are above mentioned with an amount of success entirely unknown thirty years ago.

RADICAL CURE OF HERNIA.

In the radical cure of hernia great advances have been made during the past five years. Previous to that time this operation, performed according to the older methods, was uncertain and dangerous, but now can be performed by the aseptic method with much greater safety and success, both in children and adults. In four patients under my care in hospital, whose ages ranged from 2¼ years to 7 years, and who suffered from congenital inguinal hernia, and where a truss was found insufficient to keep the hernia reduced, the operation in each case was performed successfully. On the 23rd of September, 1891, I operated for the radical cure of a right inguinal hernia on a boy, aged 18 years. The patient had tried to enlist in the army, but was rejected on account of the hernia. In seven days after the operation the wound was firmly healed. In three weeks he left hospital with no sign of a return of the hernia. On the 3rd of September, 1891, I operated on a widow lady, aged 56 years, who had suffered from a large irreducible femoral hernia for 20 years. I removed over 1lb. of omentum, twisted and ligatured the sac. The wound had healed in 11 days. I merely mention these cases to show how simple and safe is the radical cure of hernia when conducted by strictly aseptic methods.

In the preparation of this Address I acknowledge with pleasure the valuable information I have received from Dr. Sims Woodhead's recent work on "Bacteria and their Products, 1891;" and Senn's "Principles of Surgery, 1890."

In this brief summary of a few of the advances made in the science and art of surgery during the past ten years I wish to emphasise one lesson particularly—namely, that the proper treatment of a wound is of the greatest importance in the success of any operation, and this can only be accomplished when the surgeon (1) secures for the wound and everything that is brought into contact with it a thoroughly aseptic condition, (2) carefully arrests all hæmorrhage, (3) accurately unites the edges of the wound with sterilised unirritating sutures, (4) and places the wounded parts in the position of physiological rest.

ART. XXIV.—*On Hiccough.* By W. LANGFORD SYMES, L.R.C.P.I., J.P., &c.; Medical Officer for Kiltegan.

THE reproach against the writers of modern text-books in a recent number of a weekly journal, that they have not given hiccough sufficient consideration, seems well-founded, particularly when in the difficulties of a case of this most extraordinary neurosis one turns almost in vain to recent authorities for some help and information. One of the commonest of trivial personal discomforts, it is sometimes met with in the prostrate stages of certain diseases, where its import has ever been regarded as unfavourable, while its occurrence as the only manifestation of disease, as the one single symptom, or in fact as the essential disease itself, is probably one of the rarest of pathological states. It is in this, its more serious connections, that the following remarks are chiefly intended to apply, and a clinical illustration of its existence in this form will best help us to consider its pathology, prognosis and treatment—a study as difficult as it is interesting:—

CASE.—An old gentleman of a gouty disposition, whose organs were structurally sound, whose system, however, had been but seldom *relieved* by a regular attack of an acute nature, was subject to two ailments—one, occasional affections of the respiratory tract in winter—catarrh, bronchitis, or congestion of the lungs; the other, on very rare occasions, a true articular gout.

For six months previous to the following attack of hiccough he suffered from severe congestion of the lungs—now in one, now in the other—on one occasion numbness and tingling in the left arm and leg from apparently some cerebral thrombosis, while the congestion of the lung gradually assumed a cirrhotic character, with dulness and exposure of the base of the heart over the third left rib, accompanied by profuse glutinous expectoration. Within the last month the congestion became clearer, being succeeded by an irritating, dry condition of the throat and upper air-passages, with, at times, distressing aphonia.

This, however, gradually improved, and one evening during his convalescence he commenced to hiccough. After a time it became distressing, and he was given some sodii bicarbonas without relief; salt was tried, but had no effect, also sal volatile and ginger, but it continued all night unabated, while sipping water and holding the breath were of no use. Next morning, there being some considerable intestinal flatus, a purgative emulsion of castor-oil with turpentine was prescribed, and although free purgation resulted, no improvement took place. Ice was swallowed in lumps, and a mustard blister was applied to the epigastrium, followed, like other remedies, by a lull for a short time—the hiccough soon returning quite as violently. Raw whisky would sometimes check it suddenly, and give great relief, but for a time only. Chartreuse, vinegar, and *eau melisse* also checked it frequently, but only temporarily, and it again continued all night, even during sleep. Turpentine stupes, mustard foot-baths, stimulating liniments to the diaphragm, were equally unsuccessful. In view of its probable gouty origin doses of bicarbonate of potassium were frequently given in Vichy water, which was freely taken by itself. This seemed to have some effect, but on close observation it was the mechanical act of swallowing which was found to be influential rather than that which was administered. The mere swallowing of saliva several times in succession was very useful, and still better was the patient being fed very quickly with spoonsfuls of arrowroot—hardly allowing him time to hiccough. This, although unpleasant, became necessary to afford relief. Still it returned again and again. Gargling with soda and Vichy water sometimes stopped it, as did several other remedies—*e.g.*, charcoal, brandy, ice to the epigastrium, &c.; a spinal ice-bag to the cervical region having no effect. Thus it continued for eight days and nights almost incessantly.

Another most careful physical examination was made, and revealed but slight congestion of the right lung behind, and left in front, a faint systolic murmur over the mitral area, a congested and very dry condition of the pharynx, and a *highly acid state of the urine*, with a very minute trace of albumen. Having a *slight cramp in the right toe* it was frequently irritated with mustard in the hope of determining an attack of gout, but without avail.

On considering the case in consultation with Dr. Finny, who kindly saw the patient with me, it was concluded that the hiccough probably arose from some œsophageal irritation to the branches of the vagus,

associated with a catarrhal state of the cardiac orifice of the stomach, gouty in its nature, and that an attack of articular gout would in all probability clear it up, and on this basis the following mixture was prescribed:—

℞.	Potassii Bromidi -	gr. 7
	Potassii Bicarbonatis	gr. 15
	Potassii Iodidi -	gr. 3
	Chloral Hydrat. -	gr. 5

To be taken every 6th hour.

For the two following days it continued as before, apparently unabated even during sleep, although several simple remedies were useful in checking it for a time. However, on the evening of the tenth day it suddenly ceased, and did not return. The mixture was continued, and after some days tincture of calumba was substituted for the chloral.

On calculating the rate of the hiccough, and the number of hours during which it lasted, I find that during ten days and nine nights it persisted for 148 hours, averaging about 16 hours per diem at the rate of 29 per minute, alternating with each respiration. During deep sleep, however, it sometimes occurred only every 4th breath.

This gives us a total of 257,520 spasms, the depressing and exhausting effect of which on a debilitated constitution it is difficult to describe.

Coming to the ætiology of hiccough, the case before us is, I think, a typical example of the neurosis as occurring in the gouty diathesis—that is, as one of the curious manifestations of the gouty poison, taking the place, as it were, of the usual articular inflammation.

In classifying its causes Dr. Ash,[a] of Norwich, mentions under the heading "Idiopathic," such influences as the varying quantity, quality, or temperature of food and drink taken; laughing, crying, vomiting, bleeding, purging, and, as recorded by John Hunter, its occurrence after operations. It has been periodic, annual, intermittent, "lasting for months," and sometimes even fatal. As instances of the "symptomatic" variety, he mentions its existence in the fevers, gastritis, enteritis, hepatitis, peritonitis, hernia, worms, teething, jaundice, hysteria, myelitis, epilepsy, gout, rheumatism, and ague; cholera (in the algid stage of which, strange to say, it was regarded as a good omen), and pharyngeal abscess, a case of which under M. Bobe-Moreau died of hiccough;

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[a] Cycl. Pract. Med. 1833. Art. "Hiccough."

so that we see there is scarcely any disease which may not produce it as a symptom. As curious examples, Dr. Edward Liveing[a] cites one occurring for 12 hours twice a week for 4 years—periodic and intermittent—another in a girl of twelve persisting for 3 years, even during sleep, varying from 10 minutes to an hour in duration. M. Widal[b] cites a case of 19 days' continuous duration at the extraordinary rate of 55 spasms per minute. Sir Thomas Watson[c] gives an instance of an hysterical affection of the diaphragm in a girl who sat all day long on her bed uttering a loud and most discordant hiccough every eight or ten seconds.

Dr. Good[d] recorded "incessant" cases of 8 and 12 days, and one of even three months' duration; while perhaps the most remarkable instance in recent literature is that related by Dr. Foot,[e] in this Journal, of a dyspeptic boy whose hiccough lasted without intermission for 26 weeks except during sleep, averaging 14 per minute. He had been prescribed for by eight different physicians, and was eventually cured by Indian hemp, iodoform, and conium. It was here observed that the act of vomiting, or the preparation for it, deranged its rhythm. Dr. Foot also alludes to the case of a girl who died of a hiccough and fright caused by the sudden execution by the police of a search-warrant in her bedroom. The late Dr. Henry Kennedy related an instance of a young lady with a hiccough, which lasted for seven months, ceasing the moment she fell asleep, but commencing at once on awaking, and sometimes being reduplicated or "double." She was, however, eventually cured by a three weeks' course of electricity at the hands of an amateur.

In a recent Indian contemporary journal[f] the case is recorded of a retired officer of seventy-six years attacked by obstinate hiccough after acute congestion of the liver, lasting incessantly for 72 hours, cured by a hypodermic injection of apomorphin sufficient to produce vomiting, which act, having previously checked it, led to its prescription.

Lastly, Graves[g] instances a case of maculated typhus in a corpulent man who hiccoughed for several days more than 18 hours out of the 24.

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[a] Hilton Fagge and Pye Smyth. Text-book of Pract. Med. Third Edition. 1891. Vol. II., p. 173.

[b] Gazette Médicale de l'Algerie. Vid. Handfield Jones, Functional Nervous Disorders. 1864.

[c] Lectures. 1871. Vol. I., p. 723.

[d] Cycl. Pract. Med. Op. cit.

[e] Dubl. Journ. Med. Science. December, 1881.

[f] Vide Med. Press and Circular, June 15, 1892. "Obstinate Hiccough."

[g] Clinical Medicine.

Turning in this connection to authorities on diseases of the stomach and gout, as we approach its pathology more closely we find ourselves in a battlefield of conflicting opinions. From the time of Sydenham to the middle of the present century the expression "gout at the stomach" had been held to convey a genuine pathological condition, a true phase of the disease actually met with in practical medicine. These were the days of the purest empiricism, when physiology—as we now know it—was in embryo, pathology consequently erroneous, while morbid anatomy was but little, if at all, investigated, the indices of medical works containing strange types of disease, while the physician or barber-surgeon treated his patient on lines handed down from his forefathers. To this age succeeded that of more searching scientific investigators, amongst whom we find Brinton[a] and Sir Thomas Watson declaiming against this affection as a fabrication, an impossibility, never seen in the deadhouse, and therefore not found in the hospital—combining to denounce it with the reproach of a "vulgar belly-ache taking rank by courtesy as 'gout in the stomach.'" More recently still we find Garrod,[b] Fothergill,"[c] and Gairdner returning, by the aid of an enlightened physiology, to the belief of the fathers that the affection is once more possible—nay, clinically met with as a painful, serious, and even fatal variety, of which the case before us seems a peculiarly interesting example.

In noticing hiccough as a symptom of gout in connection with vomiting and other gastric symptoms, Dr. Gairdner remarks:—"Very obstinate hiccough is a frequent attendant of this form of gout. I have seen it distress patients by day and night without any intermission for a great length of time. It often comes on after a sudden suppression of the discharges of urea and urates by the kidneys, *and I regard it as an unequivocal sign of approaching death.*" This gloomy prognosis is also partially shared by Fothergill, who says—"Certain it is, persisting hiccough is always held to be of bad omen, though I have seen it pass away along with other grave symptoms."

Its existence and significance in fever has been graphically described by Graves, Stokes, Murchison, Hudson, and more recently still by Dr. J. W. Moore,[a] who unanimously regard it as a very grave sign when accompanying the floccitatio or carphology of the malignant and prostrate stages of severe typhus and enteric fevers. It is here usually associated with tympanites and meteorism, though seen by these observers independently of digestive trouble and apparently dependent upon lesions of the nervous system.

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[a] Diseases of Stomach. 1864.

[b] Gout. Third Edition. P. 486, *et seq.*

[c] Gout in its Protean Aspects. 1883.

The pathology of hiccough, for a long time a debated point, is now believed to be a reflex spasm of the diaphragm with simultaneous closure of the glottis having as afferent nerve the pneumogastric, and efferents the *phrenic (?)* and recurrent laryngeal.

In this mechanism it would seem that the diaphragm either receives the first impression, as the phrenic apparently responds more quickly than the recurrent laryngeal, or, receiving a stronger impulse, overcomes that of the recurrent nerve; for we find that frequently the diaphragm contracts before the glottis is perfectly closed, a noise being thus produced in the larynx from some air leaking into the trachea. When, however, as occasionally happens, the glottis is securely shut, no noise accompanies it, and this of necessity, by tending to produce a potential vacuum in the thorax—a most unnatural condition—is a greater shock to the patient; and therefore we can understand how it is that a noiseless hiccough is the most distressing. Whether it be in time, or strength of current, that the laryngeal is behind the phrenic, or whether the impressions reach the diaphragm *by a shorter route* than by way of the cervical spine, or whether the contraction of the diaphragm overcomes that of the laryngeal muscles even when acting in unison, or whether it be the acts of inspiration or expiration which are influential in producing the noise in a semi-closed glottis, are interesting points in physiology which appear open to debate. It seems from closely observing the act that the noise is always present when the hiccough occurs during inspiration, but *not* if in the pause or during expiration.

Now we must not forget that gastric impressions may also reach the diaphragm more directly through the sympathetic filaments of the gastric plexus, the semilunar ganglion, diaphragmatic plexus, and ganglion diaphragmaticum, joining on the right side the phrenic nerve, and I find this view is supported by the testimony of Dr. Habershon,[b] whose preparations in the museum of Guy's Hospital demonstrate this connection.

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[a] Text-Book of Eruptive and Continued Fevers. 1892.

[b] Lumleian Lectures on the Pathology of the Pneumogastric Nerve.

Formerly believed (Copland) to be the "fons et origo mali," the part played by the phrenic nerve in the production of hiccough has been erroneously exaggerated. Romberg seems to have been the first to emphasise the fact that direct irritation of the phrenic will not produce it, basing his opinion on two cases recorded by Bright, in which organic disease, affecting the right phrenic nerve, produced other nervous disorders, but *no hiccough*. It seems at the bedside not affected at all, and watching the patient apparently supports this view. There is no disease in its course, and the cervical spine and respiratory centre are alike healthy. The breathing proceeding quietly as before, it performs its respiratory functions as regularly as it can, but does so, as it were, with fear and trembling, for every now and then, at different and irregular intervals—it may be in the beginning, middle, or end of the pause, early or late in the inspiration, or in the first or second half of expiration—a violent convulsion of sympathetic and pneumogastric origin comes on, suddenly producing a spasm in the diaphragm *over which the individual has no control*, and one's sympathies for the patient might be physiologically extended to his unfortunate phrenic nerve. Whether the phrenic does transmit this efferent impulse does not seem at all clear, and investigation is still wanting to decide by which route the current is transmitted. To my mind, from clinical observation alone, the sympathetic connections of the semilunar ganglion seem far more likely to convey the impressions than the phrenic, and for the following reasons:—

1. The diaphragm appears to contract *before* the laryngeal muscles, pointing to a closer and more direct communication with the gastric portion of the vagus than even the recurrent laryngeal.
2. The course of the phrenic nerve is healthy, and its respiratory function perfect.
3. The patient has no control over the spasm, while the phrenic is always subservient to one's will.
4. Remedies applied to the origin or course of the phrenic, or to the cervical spine, such as blisters, ice-bags, compression, &c., &c., have no effect; while those directed to the diaphragm, stomach, and solar plexus, are generally curative.
5. The connections between the pneumogastric and phrenic by means of the 3rd, 4th, or 5th cervical nerves, are remote, and if this were the route taken, the impression must travel more than double as fast on the phrenic than it does on the recurrent nerve,

since it reaches the diaphragm before the larynx—conditions which are unphysiological.

6. The experiences of Romberg and Bright, which show that direct irritation of the phrenic will not produce hiccough.

7. The existence of a perfect reflex-loop between the stomach and diaphragm, which more directly answers the purpose, separate from the function of respiration, and beyond control of the patient.

8. It being influenced by the acts of deglutition or vomiting to a greater degree than by any respiratory efforts.

During sleep it is less frequent. The impulses seem imperfectly transmitted or aborted, being only of sufficient strength to produce a true convulsion every second breath, while finally, by the deepest sleep they are so weakened that the diaphragm may escape for four respirations the transmitted current from its afferent nerve.

As a typical example of a perfect reflex action, a true neurosis, there is, perhaps, not its equal in pathology.

The influence of the act of swallowing, which is undoubted in allaying it, is, I believe, due to the employment of the pneumogastric for this purpose as much as possible, in the mechanism of which it is largely engaged, and thus detracting from its truly gastric function, rendering it, as it were, less sensitive to, and less capable of, conveying with precision the morbid impressions arising within the stomach. In this connection it is to be noticed that in Dr. Foot's case, and also in that of the retired Indian officer, the act of vomiting had similarly a marked influence over its rhythm and duration.

Of the treatment of obstinate hiccough little can be said; it might be advantageous to divide it into (1) empirical; (2) antispasmodic; and (3) physiological.

Under the first heading would come almost every known drug or household remedy, of which the most efficacious I have found to be very frequent acts of swallowing raw whisky, vinegar, "Eau de Melisse," hot brandy punch, or a mustard blister over the epigastrium.

Of antispasmodic remedies chloral hydrate was used with success in the above case, and might be replaced by such as nitrite of amyl, Calabar bean, cocaïn, hydrocyanic acid, atropin, morphin, or nicotin.

The physiological treatment, however, depends upon an accurate diagnosis of the conditions under which it occurs, of the constitution in which it is met with, and of the probable nature of the irritation to which the gastric or œsophageal branches of the vagus are subjected—as foreign bodies, accumulations, distension, worms, or specific morbid states of the viscera, such as gout, &c., each of which must in turn become the basis of a distinct and specific treatment.

ART. XXV.—*Aneurysm of the Aorta opening into the Left Lung and Pleura.*[a] By J. W. MOORE, B.A., M.D., Univ. Dubl.; Censor and V.P., R.C.P.I.; Physician to the Meath Hospital, Dublin; Joint Professor of Medicine, Royal College of Surgeons in Ireland.

CASE.—On October 12, 1892, Christopher W., a married man, aged fifty-seven, by occupation a messenger, presented himself for admission to the Meath Hospital, as he had been suffering for about a week from "spitting of blood." Physical examination showed unmistakable evidence of aortic regurgitation, but the hæmoptysis suggested to my mind that the lesion was probably accompanied by thoracic aneurysm, more particularly as there was an area of dulness on percussion about the left angle of Ludovicus, and the pulse seemed less full in the left than in the right brachial and radial arteries. He was up and dressed when examined, and I confined my attention to the condition of the circulation, intending to complete the physical eaxmination next morning. Unfortunately, during the night profuse hæmoptysis came on, which proved uncontrollable and caused his death, the immediate precursor of which was the fourth of a series of epileptoid convulsions of great severity.

The *post-mortem* examination was made with much care by Dr. James Craig, and the following notes were taken by Messrs. A. H. White and G. Woodside, the Clinical Clerks:—

"On opening the thorax, the right lung seemed to be more collapsed than usual—its anterior edge was emphysematous. Owing chiefly to the retraction of this lung the heart and great vessels were at once seen to be greatly displaced to the right of the middle line (concentric displacement). But there was also excentric displacement. The left lung and pleura occupied half of the thoracic cavity, and on opening into the left pleura it was found to be greatly distended with blood-clot. The upper lobe of the left lung—more especially its lower, inner, and posterior portion—was almost black from extravasated blood. The adjacent part of the lower lobe presented a similar appearance. On closer investigation it was seen that the blood had obtained entrance into the pleura by an opening in the inner part of the interlobar septum, having flowed through a somewhat irregular channel in the torn lung tissue, partly in the lower, but mainly in the posterior and inner portions of the upper lobe, almost at its junction with the lower lobe. The descending aorta was found to be adherent to this lower, inner, and posterior part of the upper lobe. The vessel was also in communication with the lung by a circular opening in its walls. This opening was somewhat larger than half-a-crown, with a rounded and slightly thickened circumference. Corresponding to the defect in the wall of the aorta just described, the bodies of the fifth and sixth dorsal vertebræ were eroded—the latter slightly, the former to a considerable depth, while the intervening intervertebral cartilage stood out prominently—having (as is usual in such cases) resisted the eroding process. The whole arch of the aorta was widened and atheromatous, with numerous calcareous plates and patches. The aortic valves were rigid and had exceptionally large corpora Arantii.

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[a] Read before the Pathological Section of the Royal Academy of Medicine in Ireland, on Friday, November 4, 1892.

"The liver weighed 4 lbs. 3 ozs.

"The kidneys were normal in size and also in appearance on section."

As regards the patient's previous history, I may mention that in October, 1888, he was under the care of my colleague, Dr. Foot, for "spastic paraplegia," and that, in May, 1889, he spent 20 days in hospital under my care, when the physical signs of aortic regurgitation were well marked.

In Dr. Stokes's classical work on "The Diseases of the Heart and Aorta"[a] will be found a most instructive account of the occurrence of hæmorrhage in aneurysm. Dr. Stokes quotes the views of Dr. W. T. Gairdner, of Glasgow,[b] as to the nature of certain cases of hæmatemesis, in which he holds that the bleeding results from the leaking of an aneurysmal tumour. Having instanced many cases of hæmorrhage in aneurysm, Dr. Stokes describes two cases in which successive hæmorrhage in quantity took place from a thoracic aneurysm. In each case the opening of the sac was into the right pleura. In one of these cases there were two, in the other three, distinct hæmorrhages. In the latter instance "sudden and stormy death" occurred in Dr. Stokes's presence as an almost instantaneous result of the third attack of hæmorrhage. "Immediately before the attack the patient appeared perfectly well. He was cheerful, had a good colour, a full, strong, and regular pulse; his appetite was good and respiration tranquil. He had occasion to turn on the left side, when, in an instant, a fearful attack of convulsions came on. The pulse disappeared, and after a few spasmodic respirations he was dead. On dissection, the whole sac of the pleura was found filled with blood, which had separated into crassamentum and serum." The aneurysm had ruptured at the lowest portion of the thoracic aorta. The heart was healthy.

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[a] Dublin: Hodges & Smith. 1854. Pp. 580, *et seq.*

[b] Edinburgh Medical Journal. Third Series. Vol. I. 1850.

Dr. Stokes adds: "In most instances of sudden death we observe syncope, with or without convulsions or asphyxia. The occurrence of either of these conditions depends, in a great measure, on the direction of the hæmorrhage. If the aneurysm burst into a serous sac, or into a free canal, such as the œsophagus, fatal syncope may be the result; while death by asphyxia is produced when it opens into the air-passages, or into the substance of the lung itself, which may be at once and extensively lacerated by the torrent of blood."

The case now detailed was manifestly, in the first instance, one of endarteriitis, leading to atheromatous ulceration of the aorta. At the same time, the marked erosion which two vertebræ had undergone proves that aneurysmal dilatation had taken place on the posterior aspect of the aorta, and this actually was so.

The course of events in the present instance was no doubt a chronic endarteriitis, followed by fatty degeneration and softening beneath the intima (atheromatous abscess). Then an atheromatous ulcer formed owing to the disappearance or tearing of the intima, and finally ulcerative or necrotic processes extended to neighbouring structures—a portion of the lung coming ultimately to form part of the wall of an aneurysmal sac.

DEATH OF MR. MICHAEL FOX, L.A.H., DUBLIN.

We deeply regret to announce the death of Mr. Michael Fox, which occurred at Claycross, Chesterfield, on November 6th, 1892, from enteritis. The deceased was well known amongst the teachers and students of Dublin, with whom he was an especial favourite. He practised in Longford, his native town, for some time, but through ill health he was obliged to relinquish his practice and to travel abroad. He took voyages to India, Australia, and to North and South America. Believing he had sufficiently recouped his strength, he again settled down to practice, but it proved too much for his delicate constitution. He was only thirty-three years of age at the time of his death, and he was the youngest of three brothers, all members of the medical profession.

PART II.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

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Reports from the Laboratory of the Royal College of Physicians, Edinburgh. Edited by J. BATTY TUKE, M.D., and D. NOËL PATON, M.D. Vol. IV. Edinburgh and London: Young J. Pentland. 1892. Pp. 254.

WE have frequently called the attention of our readers to the valuable work which is each year turned out from the laboratory of the Edinburgh College of Physicians. The fourth volume now before us shows that there is no falling-off in either the quantity or quality of the matter—on the contrary, we are told that the amount of work done during the past year has been so large that it cannot be all published *in extenso* in this volume. Some of the papers are accordingly published only in abstract, the complete publication to be made elsewhere. A better classification of the papers than has hitherto been attempted is adopted in this volume, so that in all respects it will more than bear comparison with its predecessors.

Fifteen papers are contained in this fourth volume of Reports. The first gives an account of "The Anatomy of the Female Pelvis at the beginning of the Fifth Month of Pregnancy," as studied by frozen sections. The case examined is remarkable as having a dermoid tumour of each ovary. One was removed a short time before death, the other is described in the sections.

The second paper, by the same author, Dr. J. C. Webster, is given only in abstract. It is entitled "A Short Abstract of Researches in Female Pelvic Anatomy." It is to be published in full for the College of Physicians as a separate memoir. It formed part of a graduation thesis which gained the author a gold medal, and the Freeland Barbour Research Fellowship.

The third paper, by Drs. Berry Hart and Gulland, is "On the Structure of the Human Placenta, with Special Reference to the Origin of the Decidua Reflexa." The observations were made partly on animals, partly on the human subject. It is shown that at the seat of the placenta the uterine epithelium degenerates and disappears, and that the fœtal villi are covered only by their own epithelium. This disappearance of epithelium is necessary in order that the ovum may take root, which can be accomplished only in connective tissue. This is why the ovum almost invariably grafts itself in the body of the uterus and never in the cervical part, since the stripping of the epithelium, due to the preparatory menstruation, is confined to the body. Tubal pregnancy may occur if, as frequently happens, the epithelium of the Fallopian tube is destroyed by disease. The following explanation is given of the formation of the decidua reflexa :—

> "The villi, with their epithelial covering, purely epiblastic and fœtal in its origin, graft themselves on the decidua serotina, *while this serotina is forming, prior to its completion, and thus the serotina completes itself over the ovum as it were ; the ovum becomes imbedded in the serotina, and the reflexa is merely the superficial portion of the serotina. The serotina proper is the deep portion.*"

In the next paper, "On the Action of the Valves of the Mammalian Heart," Dr. Noël Paton contends that the auriculo-ventricular valves are not, as is commonly supposed, floated up prior to their closure, but that their edges come together by a simple approximation of the valves in a more or less vertical position. He maintains that by this means the pressure is better resisted, and that the ventricular cavity can more completely empty itself by contracting upon the central mass of valves, chordæ, and papillary muscles. He also points out the important action exerted by the anterior cusp of the mitral valve in keeping the aortic orifice open during the contraction of the ventricle, and calls attention to the support which the closed sigmoid valves receive from the muscular wall of the heart.

Some of our readers will doubtless remember the important research made by Drs. Noël Paton and Balfour on the composition and flow of the bile in a woman with permanent and complete biliary fistula. Of this research we gave a summary in our notice of the third volume of these Reports. One of the most important of the conclusions which were drawn was, "That the bile is to be regarded rather as an excretion than as a secretion playing any essential part in digestion." The truth of this is shown by an account of the present condition of the patient now given by Dr. Noël Paton. Since June, 1890, not a drop of bile has entered the intestine, but all has been discharged on the surface through the fistula. Nevertheless, her health is perfect, and has steadily improved. She is fat, gets up and begins her work every morning at five o'clock, has a good appetite, and can eat all kinds of food, even the most fatty, with impunity. Her bowels are moved regularly once a day. She has not taken a purgative since her discharge from the infirmary. An examination of the bile shows that the quantity is not increased, but that the total solids are much greater than when she was in hospital. This increase is due chiefly to the salts of the bile acids, and is doubtless to be explained as the result of a diet richer in proteids, and of a more active proteid metabolism. The ether extract (cholesterin, lecithin, fats) is practically unaltered, which is taken to indicate that there is no increase in hæmolysis, and, finally, the mucin and salts are unaltered.

In the next paper Drs. Bramwell and Noël Paton report an extraordinary case of a gentleman who passed a very large quantity of proteid in the urine. This was chiefly globulin, and when the urine was kept for some time it crystallised out, and was got quite pure for examination. This is the first occasion on which a pure crystallised globulin has been got from the animal body. The physical and chemical characters are fully described, and while it is classed with the group of globulins of which myosinogen, fibrinogen, and hepato-globulin are members, it differs from all of these, and, indeed, from all other known proteids. It was found that in this case, as in others, there was no proportion between the relative amount of proteids $\left(\frac{\text{albumin}}{\text{globulin}}\right)$ in the urine and in the blood plasma. This patient passed daily from 60 to 70 grams of proteid in his urine. It was found that this enormous loss was compensated by the large quantity of proteid food taken, which was nearly double the ordinary allowance.

An abstract of a paper already published by Dr. Gulland follows "On the Function of the Tonsils." The author believes that the function of the masses of adenoid tissue at the fauces and pharynx is to produce leucocytes. Some of these are conveyed away by the lymphatics, others remain in the tissue itself, while others, in large numbers, reach the surface, and take up foreign bodies, especially micro-organisms which would otherwise pass the tonsils. The rings of adenoid tissue act thus as guards at the upper part of the alimentary and respiratory tracts. If the formation or outward wandering of leucocytes is defective, pathogenic organisms may pass from the mouth through the epithelium into the tonsils, and may give rise to a local or general infective process.

The next paper is "On the Physiological Action of the Active Principles of Urechites suberecta," by Dr. Ralph Stockman. This remarkable plant, which grows freely in the West Indies, has been long known to possess powerful poisonous properties. It was from it that the Obeahmen were supposed to get the poisons they used. These professional poisoners were believed to be able to administer their drugs so as either to cause death immediately, or after any desired interval. Dr. Stockman finds that the active principles, urechitin and urechitoxin belong to the digitalis group as defined by Schmiedeberg. A single large dose will cause death within a short time, and it is not possible to cause death after a long interval by a single dose. But repeated small doses may cause no immediate symptoms, and yet may accumulate, probably in the heart-muscle, and cause sudden death, after being administered for some time without exciting suspicion.

Another important paper by Drs. Stockman and Dott follows, "On the Action of Thebaine, Narcotine, and certain of their Derivatives." This is a continuation of researches on the opium alkaloids, already in part published in earlier volumes of the Reports.

Next in order we have three long and most interesting papers by Dr. Alexander Miles on injuries of the brain. These constitute a graduation thesis, for which the author was awarded a gold medal and the Syme Surgical Fellowship.

The first part is on "The Mechanism of Brain Injuries." The following are the conclusions arrived at from the experiments:—

"1. That the group of phenomena, commonly spoken of as 'concussion of the brain,' is the result of a temporary anæmia of that organ.

"2. That this anæmia is the reflex result of stimulation of the restiform bodies, and perhaps other important centres in the region of the bulb.

"3. That these parts are stimulated by the wave of cerebro-spinal fluid which rushes through the aqueduct of Sylvius, the foramen of Majendie, and from the subarachnoid space of the brain to that of the cord when a severe blow is dealt over the skull.

"4. That, in accordance with the laws of hydrostatics, this cerebro-spinal fluid wave will disturb the equilibrium of the ultimate nerve-cells throughout the central nervous system.

"5. That the hæmorrhages found throughout the brain substance, and on its surface, are to be ascribed to the recession of the cerebro-spinal fluid, which naturally support the blood-vessels of the cerebrum.

"6. That the petechial hæmorrhages found in cases of so-called concussion are not the proximate cause of the symptoms of that condition. They are rather to be looked upon as an index of the force producing the injury than as the cause of the resulting phenomena."

In the second part of Dr. Miles's researches the "Effects of Blows over Different Parts of the Cranium" is experimentally investigated, and in the third we have a study of the "Microscopic Pathology of Cerebral Trauma," in which the author deals chiefly with the colloid bodies, miliary sclerosis, pigmentary degeneration of the nerve-cells, and petechial hæmorrhages. The conclusions from all these researches support the view of the importance of the disturbance of the cerebro-spinal fluid in causing the lesions in cases of head injury.

A "Short Abstract of 'Tubo-peritoneal Ectopic Gestation,'" by Dr. J. C. Webster, follows. This records a hitherto undescribed form of ectopic gestation—one partly in the Fallopian tube (extra-peritoneal), and partly within the peritoneal cavity (intra-peritoneal). The full details are to be published shortly.

A long and exhaustive paper, by Dr. James Ritchie, on "General Cystic Degeneration of the Adult Kidney," gives the details of a case, and a very complete bibliography of the subject. The following are the conclusions:—

"That in cystic kidney there is an irritative lesion leading to proliferation of epithelium, and also to connective tissue changes.

"That proliferation occurs in varying degrees under different circumstances. There is evidence of it in simple cysts, in those which occur in contracting kidney, but to a much greater degree in the large polycystic kidney.

"That in large polycystic kidney, as in cystic disease of the mamma, the disease arises in consequence of irritation propagated through the nervous system.

"That this disease of the kidney has no direct relation to congenital cystic kidney, which is due to an error in development.

"That the cysts are formed from the pre-existing tubules and Malpighian bodies of the kidney, and that they are not new formations arising out of persistent embryonic rudiments. That this cystic disease is related to, and should be studied along with, the adenomata.

"That cystic kidney is similar in character and in origin to cystic liver."

The last paper, by Drs. Symington and Thomson, is "On a Case of Defective Endochondral Ossification in a Human Fœtus (so-called Cretinoid)." The abnormalities were found to be confined to those bones "which, formed in cartilage, largely depend for their growth during fœtal life upon endochondral ossification; the cause of the departure from the normal being a permanent arrest or absence of this process. The bones belonging to this group are the long bones of the extremities, the ribs, the posterior part of the base of the skull, and the innominate bones." The condition of the skeleton is well described and figured in the accompanying plates, and the distinctions between this condition and rickets are fully given.

The papers in this volume are illustrated by twenty-five beautifully executed plates, many of which are coloured. The work is brought out in the perfect style as to paper, print, and binding for which the publisher is so justly celebrated.

Eye-strain (Commonly called Asthenopia)). By Ernest Clarke, M.D., B.S. (Lond.). London: J. & A. Churchill. 1892.

The author of this well-printed monograph has done good service in collecting, digesting, and reproducing in a very readable form all that is known about this most important and interesting subject.

Never so much as now in the world's history have the eyes been subject to so constant and trying uses, and it is but natural that fatigue, strain, asthenopia, call it what you will, should be a matter of every-day occurrence, and should attract a proportionate amount of attention.

Dr. Clarke has attempted, and with considerable success, to group the various causes into some sort of order, and then analyse each group, and point out the antidote. Twenty-two illustrations are introduced to assist him in his task, and the book is commendably free from misprints.

It is divided into four parts—

I. Eye-strain. General considerations.
II. Ciliary Strain.
III. Muscular Asthenopia.
IV. Retinal Asthenopia.

There is nothing new in this book, nor does Dr. Clarke lay claim to originality, but he has done well what he has attempted. He shows "that the symptoms of eye-strain are *nervous* phenomena naturally most prone to make their appearance in a *nervous* age or in *nervous* people, and dependent upon either an abnormal use of, or an abnormal condition of the eyes."

We said above that there was nothing new in this book, for the errors it contains are such as we have had to call attention to in other works on refraction submitted to us. Why is it that so many young writers on refraction use mathematical expressions in such a manner as to hopelessly confuse their readers. Dr. Clarke seems to regard ∞ and 0 as synonymous expressions.

At page 53 we find the equation : $a=p-\infty=p-0=p$.

Again at page 60 we find: $r=\infty=0$.

Again at page 107: $R=\infty=0$.

On page 108 a still more striking equation occurs:

$$a=14-\infty=14.$$

An equally improper use of a mathematical expression is to be found at page 124, where "V. L.$=\frac{6}{0}$" is used to mean that vision is less than $\frac{6}{60}$. Whereas the expression $\frac{6}{0}$ (which is, of course, equal to infinity) would mean that vision was infinitely good.

Other inaccuracies are also to be found. Astigmatism he defines (page 79) as "a condition of the eye in which the rays passing through do not all focus at one point." The rays—what rays? He wholly omits to define the condition; it is the rays *emerging from a point* outside the eye which in passing through the eye are not all brought to a focus at one point.

Again, at page 87, speaking of cylindrical lenses, he says—"These lenses have the property of only acting on rays that pass *at right angles to their axis*." What he meant to say was that they acted upon all rays that passed through them *except* those that passed parallel to their axis; but most strongly on those that passed at right angles to their axis.

At page 125 we find—"On examination with prisms it was found that, when by their use the images were separated laterally, that of the right was always *lower than the left by two inches.* The other was a girl, aged 16, who had hyperopic astigmatism, and whose right image was *six inches lower* than the left." But he omits to state at what distance!

On page 91 he speaks as if he still believed in the verity of *amblyopia ex anopsia;* and we confess to some surprise at reading (at page 8) that eye-strain will produce "granular lids"—by which we suppose he means true trachoma, not simply chronic conjunctivitis.

We have noted these few points in no captious spirit, but because in a work of this kind it is of the utmost importance that its *exactness* and accuracy should be unimpeachable.

On the whole we congratulate Dr. Clarke upon producing the most complete and satisfactory statement of the present extent of our knowledge upon this important condition.

RECENT WORKS ON DISEASES OF CHILDREN.

1. *Disease in Children: a Manual for Students and Practitioners.* By JAMES CARMICHAEL, M.D., F.R.C.P.Ed.; Physician, Royal Hospital for Sick Children; University Lecturer on Disease in Children, Edinburgh. Illustrated with 31 Charts. Edinburgh: Young J. Pentland. 1892. Pp. 591.
2. *The Diseases of Children, Medical and Surgical.* By HENRY ASHBY, M.D., Lond., F.R.C.P.; Physician to the General Hospital for Sick Children, Manchester; Lecturer and Examiner in Diseases of Children in the Victoria University; and G. A. WRIGHT, B.A., M.B., Oxon.; F.R.C.S. Eng.; Assistant-Surgeon to the Manchester Royal Infimary, and Surgeon to the Children's Hospital; Corresponding Member of the American Orthopædic Association. Second edition. London: Longmans, Green & Co. 1892. 8vo. Pp. 757.

1. DR. CARMICHAEL's book is intended to give a concise account of the clinical features of the more common diseases met with in children. It is, therefore, a systematic treatise, in which the ætiology, pathology and morbid anatomy, symptoms and signs, prognosis and treatment, are described as fully as space permits.

The author has, we think, successfully carried out his intention; but in our opinion the general idea and scope of this work is wrong, and we fear it will not prove of much use. The author states that he assumes that his readers are acquainted with general medicine and the diseases of adult life. We wish he had shown more confidence in this assumption. When a practitioner, or even a student, buys a short work on Disease in Children, it is not in order to obtain a systematic account of such diseases as are common to children and adults. He already possesses works on medicine which describe fully and systematically enough the symptoms, ætiology, morbid anatomy, &c., of scarlatina, diphtheria, tuberculosis, chorea, pleurisy, and other diseases which are not peculiar to children.

What he needs is something which will supplement his books on practice of medicine, and will not go over ground with which he is already familiar. He wants a good deal of detailed information on the feeding of infants and children; he wants rather precise directions about the treatment of disease in children, in so far as it differs from the treatment suitable to adults, and directions as to dosage of medicines at different ages in various diseases. He needs to have explained to him at considerable length any points of difference which exist between the diagnosis and prognosis of diseases in children and in adults. We are, therefore, of opinion that a work on disease in children should not aim at being systematic unless it can be at the same time fairly complete, and a work cannot be fairly complete unless it is several times larger than the book before us.

We must give an illustration of our meaning. There is no disease more troublesome to the practitioner than diarrhœa in infants. When we look up the chapter on this subject in Dr. Carmichael's book, we find it does not quite occupy two pages, and the directions given are very ill-defined—*e.g.*, "The pulv. cretæ aromat. c. opio, or the simple pulv. cretæ aromat., in suitable dose according to the child's age may be tried," is not very valuable to the anxious doctor who needs a hint; especially as there is no mention made, as far as we can see in this work, of what dose of opium is safe and suitable for children of different ages.

We fear that we have found a good deal of fault with this book; but the faults are of omission, not of commission. Dr. Carmichael has carried out his plan very well; the book is written in good style, and is evidently the work of a man who writes on a subject with which he is familiar.

2. In December, 1889, we favourably noticed the first edition of Dr. Ashby's and Mr. Wright's "Diseases of Children" (Volume LXXXVIII., No. 216, third Series, page 510). Our matured acquaintance with their book confirms the high opinion originally formed as to its merits, and we gladly welcome the second edition. In preparing it for press the authors have striven, and not in vain, to keep the work abreast of advancing knowledge. For example, in the second chapter on the diseases incident to birth, we now find added paragraphs on "sclerema neonatorum" and "œdema neonatorum," while the section on "tetanus nascentium" has been modernised by the introduction of a description of Nicolaier's

bacillus, which plays such an important part in the ætiology of the disease, as well as of a paragraph on the preventive treatment based upon that ætiology.

In Chapter III. the important topic of the hygiene and diet of infants and children has been amplified, especially by the addition of sections on wet-nursing, weaning, and sterilisation of milk.

As an example of the thorough manner in which the work has been brought up to date, we may instance the account of diphtheria, which now includes a full description of Löffler's D.-bacillus (at page 266), together with the method of staining employed for its recognition (at page 736). Strangely enough, however, we do not observe that any mention is made of Eberth's bacillus in the case of enteric fever.

At page 275, *et sequitur*, there is a good but brief account of epidemic influenza, now introduced for the first time. The authors point out that while young children in recent epidemics were apparently not less susceptible to the disease than adults, yet they passed through the attack more safely, the mortality among them being by no means as high as that among adults. For the obstinate vomiting, which in some instances accompanies influenza, the authors recommend antipyrin in effervescence, iced champagne, and small quantities of raw meat juice.

Throughout the surgical portion of the book, Mr. Wright's careful handiwork may be noticed. Many clinical reports of interesting cases have been added here as well as in the medical department.

For the first time a number of formulæ, suitable for a child of one year, are given, and several paragraphs in the Appendix have been expanded, notably those on "gavage," or forced feeding, and on milk sterilisation.

We can heartily commend to the favourable consideration of our readers this excellent text-book, which is now illustrated by no fewer than 178 woodcuts and drawings.

Medical Microscopy; a Guide to the Use of the Microscope in Medical Practice. By Frank J. Wethered, M.D. London: H. K. Lewis. 1892. Pp. 412.

This book forms one of Lewis' "practical series" of manuals. It begins with a description of the microscope and accessory apparatus, particularly microtomes. Three chapters follow on the methods of preparing tissues for examination, hardening, decalcifying, embedding, cutting, staining and mounting sections. A special chapter is devoted to the methods of preparing sections of the central nervous system. Here we find a short and imperfect account of Golgi's (always called *Jolgi* in the text) mercury method, but no notice of the more recent and perfect silver method of the same author, which has so advanced our knowledge of the anatomy of the brain and cord.

A most imperfect account is given of the methods for the examination of the different tissues, the whole being comprised in one short chapter of eight pages. We then have chapters on tumours, urinary deposits, fæces, sputum, vomit, discharges and contents of cavities, discharges from the genital organs, the blood, cutaneous parasites, food and water, and a final chapter on bacteriological methods.

It will be seen that the ground covered by this volume is very extensive, and consequently the covering has to be rather thin. There is, no doubt, a good deal of information contained in the different chapters; but we think the work would have been more useful if the scope had been narrowed and somewhat more thoroughness of detail introduced. As it is, a student working alone would often find himself in difficulties if he had not more minute descriptions of how to proceed than are to be found in Dr. Wethered's book.

The text is profusely illustrated by good drawings, some of which are original.

The Australasian Medical Directory and Hand-book, including a General Gazetteer and Road Guide, and Local Medical Directory of Australasia. Edited and compiled by Ludwig Bruck. Third Edition, corrected up to August 31, 1892. Sydney: The "Australasian Medical Gazette." London: Baillière, Tindall, & Cox. 1892. 8vo. Pp. 237.

The first edition of this useful book of reference was published in 1883. The second edition appeared in 1886. The present, or third, edition is dated "Sydney, September 1, 1892." We are confident the time is not now far distant when an annual issue of the work will be imperatively called for.

The book contains a wonderful amount of information in a condensed form. It is simply indispensable to medical practitioners scattered throughout the wide realm known as "Australasia," and, if we do not greatly mistake, it will be a welcome addition to our home libraries also.

The scope of the work is indicated in its very comprehensive title, which stands at the top of this review. We have tested the correctness of the information given in its pages, and are glad to say that the work has borne the test. It only remains for us heartily to congratulate the editor on the success he has achieved in the publication of the "Australasian Medical Directory," which must have cost him much labour, time, and money.

A Guide to the Examination in Sanitary Science. By HERBERT JONES, D.P.H., Camb. London: Baillière, Tindall & Cox. 1892. Pp. 99.

IN America this would be classed as a "Quiz Compend." It deals with examining bodies and their syllabuses, giving seven pages to chemistry, microscopy, and examination of premises. There are then a number of examination questions, which refer to forty pages of "Notes on Questions," which end the book. The isolated facts thus presented are not inviting, but they may serve to burnish up the memory of a candidate who is going in for examination.

Diphtheria and allied Pseudo-Membranous Inflammations; a Clinical and Bacteriological Study. By WILLIAM HALLOCK PARK, M.D. New York. 1892. Pp. 48.

THIS paper is a reprint from the *Medical Record* of July and August, 1892. The main conclusion arrived at is that there are two great divisions of pseudo-membranous inflammations--one caused by the Klebs–Löffler bacillus, the other by some form of streptococcus. The first is from first to last a local process, and its lesions are due to the effects of the poison formed by the bacilli in the pseudo-membrane; the second is at first a local process, but may at any time become a general infection. It is particularly liable to cause broncho-pneumonia in children. Both diseases are frequently associated together; both are distinctly contagious, although in different degrees. The term diphtheria should be confined to the former condition; the latter may be provisionally called pseudo-diphtheria. The distinction between the two is to be made in doubtful cases only by bacteriological examination. Full details are given of how this is to be done, and a good plate is appended, showing the appearance of plate-cultivations of the different micro-organisms. The author, however, admits that such an examination cannot be made by the ordinary practitioner, and advocates that Boards of Health should establish and maintain a sufficient number of laboratories where such researches could be made by experts employed for the purpose.

The paper is a very readable and valuable contribution to the subject of which it treats.

On Congenital Obliteration of the Bile Ducts. By JOHN THOMSON, M.D. Edinburgh: Oliver & Boyd. 1892. Pp. 52.

THIS paper is founded on a graduation thesis, and has already been published in the *Edinburgh Medical Journal.* In it is recorded a case where the hepatic ducts were obliterated, and had no connection with either the duodenum or with the cystic duct, which was pervious, and opened into the intestine. The condition is illustrated by a good plate. The paper also contains a very extensive research into the history of all similar cases previously recorded, and a comparison of these is facilitated by well arranged tables and series of diagrams showing the parts of the biliary passage obliterated in the different cases.

It is supposed that the condition commences as a defect of development causing narrowing of the bile duct. This leads to inflammatory changes which complete the obliteration. On this follows biliary cirrhosis and chronic blood-poisoning, the functions of the liver being so interfered with that it lets past into the circulation organic products of digestion of a poisonous nature. Hence vomiting, spontaneous hæmorrhages, and convulsions, which gradually lead to emaciation, diminished vitality, and death. The length of time during which children live with this condition shows that the presence of bile in the intestine is not very necessary for digestion.

This paper is a most valuable contribution to the subject with which it deals. There are two appendices. In the first, a case of congenital obliteration of the upper part of the small intestine, due probably to adhesive peritonitis is recorded and figured. In the second, a case is described of partial obliteration of the gall-bladder in a newly-born infant, associated with numerous other congenital malformations, as hare-lip, cleft palate, ear adherent to side of head, deformed hands, fœtal condition of heart and great vessels.

PART III.

SPECIAL REPORTS.

REPORT ON NERVOUS AND MENTAL DISEASE.[*]

By RINGROSE ATKINS, M.A., M.D.; Resident Medical Superintendent, District Lunatic Asylum, Waterford.

[*Continued from Page 446.*]

III. NEURO-PATHOLOGY AND PATHOLOGICAL ANATOMY.

Syphilis as a Cause of Tabes.—Erb. (*Berl. klin. Wochenschr.*, 1891, No. 29) reports on 371 cases observed by him since 1883, when he published his first statistics on this subject. The conclusion at which he then arrived—that syphilis is by far the most important ætiological factor—is confirmed by his additional experience. Among fifty-one army officers, including surgeons, suffering from tabes, forty-nine had certainly been infected with syphilis, forty of whom had shown secondary symptoms. Among 300 cases occurring in the higher social classes the percentage was as follows:—

Without ascertainable infection	11	per cent.
Certainly infected	89	,,
Had suffered from secondary symptoms	63·3	,,

These percentages are approximately the same as his earlier statistics.

For comparison, 5,500 men in a medical clinic were examined, with the result that syphilis was ascertained in only 22·5 per cent., and secondary symptoms in 12·1 per cent.

In three cases of married couples, both of whom had suffered from syphilis, both subsequently developed tabes. The disease developed most frequently in from six to fifteen years after the infection.

As to other ætiological factors, heredity and the neuropathic constitution are of little importance. Intemperance and tobacco, sexual excesses, and traumatism are of considerable moment. Out of 550 patients, 207 were business men and 51 officers. Only one was a clergyman, and he was syphilitic.—(*Am. Journ. of Insanity.*)

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[*] The author of this Report, desirous that no contribution to the subject of Nervous and Mental Disease should remain unnoticed, will be glad to receive any publications which treat of it. If sent to the correspondents of the Journal they will be forwarded.

Cerebral Disease from Congenital Syphilis.—Erlenmeyer read at the meeting of the Psychiatric Society of the Rhine Provinces, June 13, 1891, a paper on a class of cases, five of which had come under his notice within a few years, which he believes to be hitherto undescribed. All of his patients were young persons between the ages of twelve and sixteen years. All were subject to Jacksonian epilepsy, affecting exclusively extremities of one side. Physical examination revealed the fact that the affected extremities were much smaller than those of the opposite side. The greatest shortening of the arm observed was 3 centimetres, of the leg 2 centimetres. The greatest difference in the circumference of the arm was 2·5 centimetres, of the thigh 3 centimetres. The motility of these extremities was normal; neither paresis nor contracture was present. Electrical reactions were also normal. There was slight hyperæsthesia, principally kinæsthetic in character, manifested in diminution of the sense of localisation and of the position of the limbs and of the weight of bodies.

The history of the cases showed that they had suffered from fever in infancy, after which the convulsions developed. The account of the illness made it probable in all cases that the illness was a meningitis with encephalitis. In the absence of autopsies the author could only conjecture the nature of the lesion, but thought it probable that it consisted in a certain degree of atrophy. In three of the five cases the fact was established that the fathers of the patients were syphilitic before marriage. In each of two of these three the mother had had one abortion before the birth of the patient. All three had suffered in infancy with symptoms of congenital syphilis. The author therefore thinks it reasonably certain that in these cases the meningitis was of syphilitic origin. In the other two cases the data for establishing or disproving a syphilitic history could not be obtained.

Alcoholism as a Cause of General Paralysis.—The following are the conclusions of a paper by M. Rousset, read before the French Association of Alienists at Lyons in August, 1891, and reported in the *Archives de l'Anthropologie Criminelle*, &c.:—

1. The part of alcoholism in the ætiology of general paralysis has always been and is still the subject of controversy, the opinions of different authors taking four principal directions.

2. Certain patients considered formerly as alcoholic paralytics have, in fact, been given to excesses in drink. But these excesses have occurred only since the beginning of the general paralysis, so that they are rather its effect than its cause. This form of recent alcoholism therefore should not be credited with the production of the meningo-encephalitis.

3. The correlative progression of alcoholic insanity and paresis does not necessitate the deduction that the latter is produced by the former. Ethnographic and geographical considerations scarcely appear to favour any more or less preponderant *rôle* of alcoholism in the production of general paralysis.

4. The extracts from the reports of all the superintendents of the French asylums given in the general report of M. Claude (des Vosges) show rather clearly that the present opinion of clinicians on this subject are still quite diverse.

5. It appears to us that in the great majority of cases the *rôle* of alcoholism in the ætiology of general paralysis is subordinate to something undetermined and unknown, and sometimes incomprehensible, which is met with in all diseases, and which appears to be a necessary prerequisite to the development of the meningo-encephalitis—that is, the predisposition which may be, according to the subject, either cerebral and arthritic, vesanic and nervous, or alcoholic. In certain cases which are not very common, chronic alcoholism, aside from all predisposition, causing gradually a process of connective proliferation and cerebral sclerosis, may terminate in general paralysis.

The Pathology of General Paralysis in rapidly fatal Cases.—Lacher describes (*Neurol. Centralbltt.*, 1891, No. 3) two cases of progressive paralysis, running a very acute course. Both began with preliminary symptoms of melancholia which lasted about six months, and passed in both cases into a state of anxiety, associated with disturbance of consciousness, hallucinations, and symptoms of motor irritation. This latter stage of the disease lasted about three weeks, and death from general exhaustion followed. In Case II. there were mydriasis and immobility of the right pupil, and epileptoid fits during the course of the disease. In Case I., except symptoms of general motor irritation, no derangement of the motor sphere had been observed. The brains of both patients presented a considerable loss of nerve-fibres in the outer layers of the ascending convolutions, and the anterior regions of all the frontal convolutions, which loss of fibres diminished towards the anterior central gyri, where it was quite insignificant, and was not at all perceptible behind them.

In regard to the extent of loss of fibres, the two cases differed but little; however, the changes in the blood-vessels were rather remarkable in Case II., while in Case I., in comparison with the considerable loss of nerve-fibres, they were much less developed.

The author, from these two observations, arrives at the conclusion that the starting-point of the disease may be either the blood-vessels or the nerve structures of the brain.

It will require further observations to prove whether the author is entirely right in his conclusions, because Case I. is not so strongly marked as to allow positive deductions. The cases are, however, interesting and valuable, chiefly because of the opportunity afforded of studying the histological changes at an early stage of the disease.

The Alterations of the Peripheral Nerves in General Paralysis in relation with their Nuclei of Origin.—R. Callella, in a series of papers published in the *Annali di Neurologia*, IX., ii., iii., iv., 1891, on this subject, arrives at the following conclusions:—

1. The histo-pathological alterations met with in the cutaneous and intra-muscular nerves, as also in the greater part of the spinal and cranial nerve-trunks, consist in a parenchymatous neuritis of peripheral origin, a few trunks only showing simple atrophy of the myelin fibres. In the different spinal bundles, whether motor, sensory, or mixed, not only do the respective trophic centres (anterior cornua, and inter-vertebral ganglia) show no appreciable lesion, but also the anterior roots, and that portion of the posterior roots comprised between the spinal ganglia, and the coalescence with the corresponding anterior root, have a normal appearance.

In the cranial sensory and motor nerves (vagus, facial, and motor oculi) the lesions met with appear generally to be out of proportion as to degree and difference with their radicular fibres and those of the corresponding central nuclei of origin in the medulla, pons, and mes-encephalon.

2. The intensity of the primitive peripheral alteration of the nerves is in direct proportion to their distance from the nervous centres; hence it is less in degree, and in diffusion in the trunks of either spinal or cranial nerves, than it is in the corresponding terminal, sensory, and motor nerves.

3. Both cutaneous and intra-muscular nerve-fibres are involved, but not in the same degree in the same subject; and in different

cases one system or another is always the more affected. Probably there exists between peripheral nerve lesions developing by themselves, and those progressing simultaneously and independently in the cord, a certain homology, though not a causal connection.

4. To different ætiological conditions (alcohol, syphilis, &c.), and to diverse complications of the morbid process (tuberculosis, &c.), we can in all probability attribute the unequal distribution of the lesions in the cutaneous and muscular nerves, and the varying clinical and anatomical forms that the neuritis may present in the paralytics, while nevertheless the alterations of the peripheral nerves depend upon the paralysis and its complications. It is rather difficult, in the present state of our knowledge, to determine how much of these lesions is due to one or the other of the morbid conditions.

5. It seems that simple and degenerative atrophy of the peripheral nervous system may be considered as a constant feature of paresis. The mode of their production is unknown in cases of neuritis of peripheral origin. On the basis, however, of histopathological researches showing the lesions to be more advanced in the terminal fibres than in the nerve-trunks, it does not seem too rash to assume the existence of a special process analogous to ascending neuritis, which, following a centripetal course, ascends progressively along the nervous fibres.

6. In these lesions of the cutaneous and muscular nerves should certainly be sought the physio-pathology of various disorders of motility, sensibility, and speech, whatever clinical form the paresis may present itself in. A genetic relation is undeniable between the primary alteration of the peripheral nervous system, and the trophic disorders of the skin and of the lungs, so frequent and fatal in progressive general paresis.

Morvan's Disease.—This affection, first described in 1883 by Dr. Morvan, of Lannelis, in Brittany, who observed it amongst the Breton peasantry, has again attracted attention. It is one of those apparently spinal diseases associated with changes in sensibility, and nutrition manifesting themselves especially in the hands. The three symptoms on which at first a diagnosis was made were pains in the limbs at the commencement of the illness, paresis, and analgesia, especially of the hands, and the appearance in one finger after another of whitlows, painless and destructive. Several cases have been described, but the pathology of the disease ll uncertain, some physicians regarding it as merely a form of syringomyelia, while Morvan and his followers, relying upon the somewhat unsatisfactory examination of one specimen, regard it as due primarily to some change in the cord associated with thickened arteries, and secondary changes in the peripheral nerves. Two additional cases are recorded, and the subject is discussed and illustrated by George Gainon and L. Datil in the *Nouvelle Iconographie de la Salpêtrière* for Jan. and Feb., 1890, and a further case is added by Dr. Church in the *Chicago Medical Record.* The autopsy in the case recorded by Gombault showed increase in the connective tissue, with degeneration, and sometimes complete disappearance, of some of the nerve fibres, with sclerosis of the posterior columns, and posterior cornua of the cervical cord, together with extensive changes in the peripheral nerves. The latest investigations tend towards the identification of Morvan's disease with syringomyelia.—(*Alienist and Neurologist.*)

Chorea.—A study of chorea in children made by Leroux (*Rev. Mens. des Maladies des Enfans,* June, 1890) contributes largely to the overthrow of the theory of its rheumatic origin. He believes that a form of chorea is sometimes encountered that is essentially rheumatic in character, but that in most cases the union is not so direct as to prove that the chorea is an expression of rheumatism. During three years he followed at the dispensary of Furtado-Hein all cases of chorea, slight and severe, noting especially the rheumatic and cardiac manifestations. Among 162 cases thus observed 82 showed no rheumatic symptoms while under observation. The antecedents, however, were not noted, and the patients were not followed very closely. They are therefore thrown aside, and conclusions are drawn from the remaining cases only. Analysis of these cases shows the following results:—

Chorea with acute articular rheumatism, 2 cases.

Chorea with articular rheumatism, preceding or alternating with the choreic symptoms, 2 cases.

Chorea with vague pains in joints, but with no fever, 13 cases.

Chorea without rheumatic symptoms, 62 cases.

Thus in 80 cases but five had distinctive rheumatic symptoms. In every instance the history was carefully taken, and the patient followed long after cure was effected. Three, or even four relapses were seen in some cases. The author believes that it is not right to consider as true rheumatism the vague joint pains which so frequently accompany chorea. There are many cases of chorea without rheumatism, and many cases of rheumatism withou chorea. Chorea is most frequent between the ages of eight and twelve years—at the time when growing pains are common, which Leroux evidently believes are not rheumatic. Rheumatism is most common between twelve and fifteen years. Between eight and fifteen years chorea is more common than rheumatism, and growing pains are more common than both chorea and rheumatism combined.

Examination of the heart in these 80 cases revealed a mitral murmur in five patients. The lesion was evidently old. Every one of the five patients had measles, and but one subacute articular rheumatism. Eight had anæmic murmurs—three at the apex and five at the base. The remaining cases showed no evidence whatever of cardiac disease.

A history of preceding nervous disease was rare. But three children had convulsions; two had been subject to migraine. A study of heredity showed that chorea had occurred in the father in but one instance. Fourteen mothers were distinctly hysterical, and this the author believes is a point of considerable importance. Alcoholism is also an ætiological factor of much importance. Of these cases the father had been undoubtedly alcoholic in twelve. The father had been rheumatic in five instances, the mother in seven, the father and mother in one. These figures confirm the author's belief in his opinion—that chorea is not of rheumatic origin, but a true nervous disease.—(*Alienist and Neurologist.*)

Pathological Anatomy of Acromegaly.—Histological examination of the various tissues of a patient dead of this disease, by Marie and Marinesco (*Arch. de Méd. Exper. et d'Anat. Path.*, 1891, No. 41), showed the following changes:—In the extremities there was hyperplasia of the papillæ and hypertrophy of the cutis. All the connective elements were much thickened, even the finest, as the membrane of the sudoriparous glands and of the hair follicles, and the walls of the vessels. This hypertrophy reached its maximum in the sheaths of the subcutaneous nerves, which were themselves degenerated. The alteration decreased towards the larger nerve-trunks; thus the median presented only a slight hyperplasia of the interfascicular connective tissue. The periosteum, the perichondrium and the aponeurotic insertions of the muscles, with the septa of connective tissue extending to them from the surface, were hypertrophied. In the bones with an osteogenetic process, resulting in increase of length and diameter, was combined re-absorption, shown by enlargement of the medullary canals. The macroglossia was due to thickening of the submucous inter- and intrafascicular connective tissue; the contractile substance of the muscles was destroyed by proliferation of the nuclei. The nerve-trunks of the tongue were almost unaltered, and the peripheral twigs showed no such marked degeneration as in the extremities. The mucous membrane of the tongue, nose, larynx, and trachea showed simple thickening, with cell infiltration. The inferior cervical ganglion of the sympathetic was sclerotic. The neuroglia of the brain was hyperplastic. The cortical substance of the kidneys presented the changes of chronic parenchymatous nephritis. The interstitial tissue was sclerotic. The pituitary body showed hyperplasia of the follicles, marked sclerosis of the vessels and of the walls of the alveoli, the cells of which were also altered. The spleen and lymphatic glands were sclerotic.

The pathogenesis of the disease is still entirely uncertain. From the appearances it is entirely improbable that the disease depends on a primary nervous or vascular disorder. Whether the apparently constant hypertrophy of the pituitary body has any significance in regard to the pathogenesis is, in view of our ignorance of its function, a question for the future.

The seven *post-mortem* examinations on cases of acromegaly published by Dr. Souza Leite are in accord with the above observations. He found hypertrophy of the pituitary body, enormous dilatation of the sella turcica, persistence of the thymus, and hypertrophy of the cord and ganglia of the sympathetic.

Pathological Findings in a Case of Athetosis.—Dr. Graeme M. Hammond has presented a report to the New York Neurological Society on the pathological findings in the original case of athetosis on which Dr. W. A. Hammond's description of athetosis had been based. After briefly referring to the case, Dr. Hammond stated that the portion involved in the lesion consisted of fibrous connective tissue. Topographically the lesion was a lengthy one in the antero-posterior direction, parallel in its short axis, with the internal capsule. Its posterior end invaded the stratum zonale of the thalamus in its posterior third, and the posterior third of the posterior half of the internal capsule. In its anterior extension it crossed the capsule, invading the posterior third of the outer articulus of the lenticular nucleus. The author called attention to the fact that the motor tract was not implicated in the lesion, and claimed that this case was further evidence of the theory that athetosis was caused by irritation of the thalamus, the corpus striatum or the cortex, and not by a lesion of the motor tract.—(*Alienist and Neurologist.*)

IV. NEURO-THERAPEUTICS.

Treatment of the Insane in Bed.—At a meeting of the Dutch Psychiatric Society at Amersfoort, June 25, 1891, Dr. Brosius read a paper on this subject, in which he took the ground that rest in bed was of the greatest benefit in all forms of acute insanity. In the discussion which followed it appeared that it was a common practice to treat melancholia by rest in bed, but that it was not customary so to treat cases of mania.—(*Centrlbltt. f. Nervenkrankheiten*).

Bromides.—At the Seance of the Soc. de Biologie, Nov. 21, 1891 (reported in *Le Progres Méd.*), MM. Féré and Hurbert communicated the results of their study on the accumulation of bromide of potassium in the organism. All the tissues may become more or less saturated with the bromides, but certain ones are specially liable to this accumulation. These are those of which the nutrition is comparatively slow or feeble, such as the cartilages of the bones. M. Féré compared these observations with the well-known investigations of Duhamal and also of Flourens on the fixation of madder in the bones. At the same meeting M. Féré reported his observations on the comparative toxidity of the bromides. He employed of late in his experiments intravenous injections into rabbits of a one per cent. solution, administered slowly. The most toxic of the bromides are those of mercury, gold, copper, and barium; the least toxic are those of calcium, strontium, lithium, and sodium. Bromide of potassium is nearly midway in the scale. Bromide of strontium, which is very feebly toxic, may be substituted with advantage for the potassium salt in the treatment of epilepsy with large doses: the therapeutic action appears to be the same. In autopsies of epileptics who have taken large quantities of bromides, and also in animals saturated with the drug, it is found that the liver contains a greater quantity than the brain. The amount of bromide retained in the organism is very great. This state of saturation by the bromides has been accused of predisposing to tuberculosis. M. Féré has not observed this in his patients, but experimentation confirms it. Guinea-pigs saturated with bromides and inoculated with tuberculosis succumb more quickly than animals not thus medicated.

Féré, in the *Nouv. Iconograph de la Salpêtrière*, reports a large number of cases in which he has found it necessary, for the suppression of epileptic convulsions, to administer large doses of bromides, sometimes as high as eighty grains per diem. In many instances he had been able to permanently counteract the tendency to digestive disturbances and cutaneous eruptions by the administration of β-naphthol and salicylate of bismuth—one drachm of the former and half a drachm of the latter per diem—which could be administered for months without any injury.

Ethylene Bromide in the Treatment of Epilepsy.—Dr. Julius Donath, in a communication made to the *Soc. de Méd. de Budapesth*, brings under notice his experience with this compound in the treatment of epilepsy. He adopted it, as he believed in it the bromide was presented in a nascent state, and when administered for a lengthened period the detrimental effect produced by the alkalies in the usually administered bromide salts was avoided. Ethylene bromide is a brownish liquid, with an odour similar to chloroform, a sweetish taste, insoluble in water; it contains 90·9 per cent. of bromide; it mixes in all proportions with rectified alcohol, and forms with the fatty oils a clear and limpid solution. He employed the remedy in the form of an oily emulsion containing 5 per cent. of the bromide, and administered to adults thirty drops in a glass of sweetened water three times a day. Every third day he increased the dose ten drops, until he had reached 70 drops at a dose. In children from eight to ten years of age he began with ten to twenty drops, repeated twice a day. This dose corresponds to from a grain and a half to four or five of ethylene bromide. In order to avoid irritating the stomach it is necessary to give the remedy in water or milk. When the stomach is very sensitive a grain and a half to three grains of thebaia may be added to the emulsion. It may also be given mixed with alcohol in equal parts in doses of five to ten or fifteen drops in milk, or in the form of capsules containing three drops of the bromide, from four to eleven of which can be taken daily. The therapeutic results were very satisfactory. The attacks became less frequent, shorter, and lighter. In some patients also the after-effects were less marked. The ethylene bromide in some instances proved more efficacious than the potassium salts.

Cocaïn in the Treatment of the Morphin Habit.—Obersteiner, in the recent report of his private institution for the treatment of the mentally and nervously affected, which is situated in the suburbs of Vienna, says that twenty-one cases of morphin habit came under treatment during the period covered by the report. Notwithstanding the dangers of cocaïn, he has found it of very material advantage, when properly administered, in relieving the distress of abstinence from morphin. His method of using the drug is as follows:—

1. Recourse should be had to cocaïn only when the symptoms of abstinence begin to be very severe, usually about 24 to 48 hours after the last dose of morphin.

2. Cocaïn is always to be given internally, never hypodermically, and he gives the formula thus—

℞.—Cocaini muriat. - -	0·5
Acid salicylat. - - -	0·1
Aq. destillat. - - -	100·0

3. The single dose of cocaïn may be from 0·05 to 0·1, administered as required several times in the day; but a daily dose of 0·5 should never be exceeded.

4. On the second or third day the daily quantity should be rapidly diminished, and the cocaïn treatment should not in any case be continued more than five or six days.

Administered in this way it is claimed that cocaïn in many cases relieves the distress of morphin abstinence, as it does the feeling of hunger, thirst, and weariness.

Sulphonal Habit.—It was maintained at one time, of course during the early days of sulphonal administration, that the drug did not establish a habit. How this might be it was difficult to understand, for any substance exciting a desired effect upon the organism must, if habitually taken into the system, root itself in the affections of the taker. In a recent lecture given at the Congress of German Neurologists at Baden, June, 1891, Dr. Gilbert, of Baden-Baden, describes two cases of sulphonal habit amounting to a "perfect mania," in which enforced abstinence gave rise to a series of symptoms similar to those witnessed in morphin abstinence. Two other cases were described, in which serious symptoms were present as the result of the continued use of the drug. All four cases showed, amongst their symptoms, illegibility of handwriting; the patients could not write straight, and the characters were unsteady. Attention is drawn to the fact that sulphonal is very largely used in Germany, and that it can be obtained from the chemist without medical prescription. The same thing surely holds in these countries, where the tabloid system reigns supreme. What, indeed, can we not get in the most acceptable and portable form! To such an extent have new drugs invaded this country, and established for themselves an uncontrolled sale, that we cannot be too thankful to those who will make plain the dangers of the practice.

Dr. Gilbert concludes with recommendations of how the drug should be taken if it must be given—viz., in solution in boiling water poured on and allowed to cool just sufficiently to be drinkable. Sleep will follow in some fifteen to twenty minutes when this method is adopted. This method of administration is already largely in vogue amongst us.—(*Lancet.*)

PROFESSOR UNNA OF HAMBURG.

It may interest many of our readers to learn that this distinguished dermatologist has taken up his residence at Heidelberg for the next six months. Professor Unna's address at Heidelberg is the Schlosspark Hotel. He is—it will be remembered—the medical Director of the Institution for the Treatment of Diseases of the Skin (Heilanstalt für Hautkranke) at Hamburg. No more striking proof of the disastrous nature of the late outbreak of cholera at Hamburg can be adduced than this flitting of Professor Unna from that plague-stricken city.

ALVARENGA PRIZE OF THE COLLEGE OF PHYSICIANS OF PHILADELPHIA.

The College of Physicians of Philadelphia announces that the next award of the Alvarenga Prize, being the income for one year of the bequest of the late Senor Alvarenga, and amounting to about one hundred and eighty dollars, will be made on July 14, 1893, provided that an essay deemed by the Committee of Award to be worthy of the prize shall have been offered. Essays intended for competition may be upon any subject in Medicine, but cannot have been published, and must be received by the Secretary of the College, Charles W. Dulles, on or before May 1, 1893. Each essay must be sent without signature, but must be plainly marked with a motto and be accompanied by a sealed envelope having on its outside the motto of the paper and within it the name and address of the author. It is a condition of competition that the successful essay or a copy of it shall remain in possession of the College; other essays will be returned upon application within three months after the award. The Alvarenga Prize for 1892 has been awarded to Dr. R. H. L. Bibb, of Saltillo, Mexico, for his Essay entitled "Observations on the Nature of Leprosy."

PART IV.

MEDICAL MISCELLANY.

Reports, Transactions, and Scientific Intelligence.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

President—George H. Kidd, M.D., F.R.C.S.I.
General Secretary—W. Thomson, F.R.C.S.I.

SECTION OF PATHOLOGY.

President—C. J. Nixon, M.D.
Sectional Secretary—J. B. Story, F.R.C.S.I.

Friday, Nov. 4, 1892.

Dr. E. H. Bennett in the Chair.

Short Notes by Mr. Wheeler upon a Case of Traumatic Malignancy requiring Amputation and subsequent Deligation of the Femoral Artery and Vein.

Dr. Graves read for Mr. Wheeler:—The gentleman to whom the specimen exhibited belongs is a young man under twenty years of age, of a pale complexion and slight figure, who was up to January of the present year in good health. In the month named he hurt his right knee by falling against a granite stone support, when endeavouring to leap a chain. Although he suffered intense pain from the injury, he did not seek advice until April (of this year), at which period his knee-joint was circumferentially half an inch larger than his sound joint, caused by effusion; besides, there was a marked circumscribed enlargement upon the inner and upper part of the tibia, just below the articular surface. The effusion into that joint subsided under treatment, the tibial growth rather increased, and was followed by slight glandular enlargement, situated in and corresponding to the saphenic opening. Suffice it to say that amputation was performed at the lower third of thigh, and that the stump healed kindly to cure.

The enlargement in groin region for sufficient reasons was not removed at the time of the amputation; it, however, increased in size as the ient convalesced. I advised removal, which I did two months ago, g at the time of removal first ligatured the femoral artery and vein at the distal and cardiac sides of the tumour, and about one inch from the tumour at either side. The patient writes that he has recovered. I may add that upon careful examination under an anæsthetic there could not be detected any enlargement in the abdominal or other regions. It is evident that the tibial growth originated in the periosteum, and that the glandular growth was soft where it lay under the skin, but osseous where in proximity to the vessels. Dr. Graves examined the specimens. His report is as follows:—

"The head of the tibia is much enlarged, especially on the internal and posterior aspects; the capsule of the knee-joint is much thickened, but the joint itself is intact. On the lower end of the femur are two small sarcomatous growths. On section of the head of the tibia it became evident that the cancellous portion of the head of the bone had become infiltrated with the new growth, as had also the upper third of the medulla. Externally the head of the tibia is surrounded by new growth in which are many islands of bone. The gland removed from the groin is composed of two portions—one, which partially envelopes the femoral vein and artery, has a large piece of bone in the centre; and the other portion, which lay under the skin, is soft.

"One side of the femoral vein is much thickened. Its wall is infiltrated with sarcoma cells.

"The new growth in the head of the tibia is an osteosarcoma; the gland from the groin is infiltrated with osteosarcoma. The gland is especially interesting, as sarcoma does not generally spread by the lymphatics. Probably the gland got affected from the femoral vein. The growth evidently started in the periosteum. The accompanying photographs show the appearance of the leg before section, and of the gland when laid open."

The CHAIRMAN spoke, and DR. GRAVES replied.

Actinomycosis.

DR. J. ALFRED SCOTT showed a case of actinomycosis, which was found by Sir Charles Cameron in a cow slaughtered in the Dublin abattoir, and which is the first case described from Ireland. He gave a summary of the history and of our present knowledge of the disease in the domestic animals and men. The summary was illustrated by microscopical sections of the Irish case, and sections of other Scotch cases sent by Professor M'Fadyean; also micro-photographs of the principal features in the sections were shown by the optical lantern.

Aneurysm of the Aorta opening into the Left Lung and Pleura.

DR. J. W. MOORE showed a specimen of this lesion. The patient, a man aged fifty-seven, had suffered from aortic valve disease and chronic aortitis. He died of hæmorrhage after a series of convulsive seizures.

The left pleura was filled with blood, the left lung had been torn by a blood-stream which had escaped from an aneurysm of no great size in the descending aorta at the level of the 5th and 6th dorsal vertebræ, the bodies of which were eroded, leaving the inter-vertebral disc projecting between them. [This case is reported at length at page 496.]

Extensive Intestinal Ulceration in "Walking" Typhoid Fever.

DR. J. W. MOORE showed a specimen of extensive ulceration of both agminate and solitary glands of the ileum in the case of a commercial traveller, aged twenty-nine, who died on the ninth day of enteric fever, with symptoms of *delirium tremens*, terminated by a violent convulsive seizure. The patient had walked about until within 30 hours of his death. Characteristic lesions of enteric fever were found in the ileum for a distance of no less than seven feet from the ileo-cæcal valve—the Peyer's patches near the valve being ulcerated, while those higher up in the gut were still in the stage of *engouement*. The mesenteric glands were swollen and soft. There was considerable enlargement of both liver and spleen.

Two Cases of Typhoid Fever, with Cultivations of Typhoid Bacillus.

DR. M'WEENEY showed the intestines from two cases of enteric fever that had terminated fatally the previous week at the Mater Misericordiæ Hospital. The clinical course of these two cases had been signalised by the predominance of unusual symptoms tending to make the diagnosis a matter of doubt and difficulty. The first case was that of J. E., female, aged 19, who was admitted to hospital unconscious and with a high temperature. She lived for four days, but never at any time recovered consciousness. *Post mortem*—The only morbid appearance found in the course of a complete examination (including the C. N. O.) was uniform swelling of the agminated and solitary follicles of the intestine, with some slight ulceration near the ileo-cæcal valve, enlargement of the spleen, and great enlargement of the mesenteric glands. With a view to setting the true ætiology of the case at rest plate-cultivations were made from one of the enlarged glands. Dr. M'Weeney showed the cultures and also a section of the gland stained with Sahli's borax-methylene-blue. The only organisms present seemed to him to be *Bacillus coli communis*.

The second case was that of J. B., male, aged twenty-eight, who had died after a few days' very severe fever, covered with a rash exactly similar to that of exanthematic typhus. *Post mortem.*—The spleen was but slightly enlarged, but the mesenteric glands were considerably swollen, and so were Peyer's patches. As in the previous case, there was hardly any ulceration. Cultures had been made in this case also from the spleen and pericardial exudation; but as they had been made only on the previous day—that on which death had occurred—the cultures, though visible under the microscope, were as yet hardly to be seen with the naked eye. He could not say as yet whether they were *B. typhosus* of Eberth or *B. coli communis.* In conclusion, Dr. M'Weeney expressed the opinion that in future two separate categories of enteric fever would have to be discriminated—one due to the typhoid organism, the other to Escherich's bacillus.

The Section adjourned.

SECTION OF SURGERY.

President— E. **Hamilton**, President of the Royal College of Surgeons in Ireland.

Sectional Secretary—R. L. **Swan**, F.R.C.S.I.

Friday, Nov. 11, 1892.

The **President** in the Chair.

The **President** read an address alluding to the various surgical advances that had of late years occurred. He alluded to anæsthesia, antiseptics, and vivisection, and condemned the senseless outcry which practically denominated men of learning and refinement as brutal savages. [This Address will be found at length at page 465.]

Estländer's Thoraco-plastic Operation.

Sir William Stokes made a communication on Estländer's thoracoplastic operation. After some preliminary remarks on the great advances that have been made in recent years in thoracic surgery, he dwelt on the causes that have of late been chiefly instrumental in enabling surgeons to get better results now in the treatment of empyema than formerly—these being mainly antiseptic practice and the adoption of thorough and methodical drainage. He discussed the cases in which drainage would be likely to be sufficient and those in which something more is required—viz., a plastic operation such as Estländer's. The particulars of a series of cases operated on by Sir William Stokes and his colleague, Sir P. C. Smyly, were then detailed, the results of which were, on the whole, most satisfactory. The author then discussed the question as to whether thoracoplasty should be regarded as only suitable and restricted to chronic fistulous empyemata, and the cases that have frequently been tapped, or whether it ever should be adopted as a primary operation. The results of the experience derived from the cases operated on in Dublin would tend to show that ultimately the operation will be deemed applicable to a much larger range of cases than at present. The author discussed the various lines of incision recommended by Estländer and others, but considered that a more important matter was to determine the point where the opening into the cavity of the pleura should be. The views of Mr. Godlee and Mr. Heuston were considered, the author being of opinion that the situation recommended by them would be, in the majority of instances, perilously near the diaphragm. The question of flushing the pleura was also discussed, the author giving his approval to the practice both during and subsequent to the operation.

Mr. Heuston said that in the admirable paper of Sir William Stokes he had hit on the keynote in the treatment of empyemata when he stated that the method to be employed depended on the duration of the purulent effusion, as that to talk of any one method of treatment for all empyemata was quite irrational. In reference to Estländer's operation, it was required only in cases of very long standing, where the conditions as mentioned by Sir W. Stokes existed, and gave rise to a space which could not be occluded unless the chest wall were allowed to adapt itself to the collapsed lung. In the performance of Estländer's operation it was important that the periosteum of the rib should not be preserved to a great extent, as it was liable to form new bone to such an extent as to do away with the object of the operation. In the more recent cases operated on by Mr. Heuston he turned the flap of periosteum over the end of the rib where it had been cut across, and thus hindered the absorption of the discharge by the cancellous bony tissue, to which he ascribed the immunity of his patients from pyæmia, which some authors consider the greatest danger from this operation. Mr. Heuston expressed his thanks for the flattering mention made of his paper, and in reply to Sir W. Stokes, wished to state that he never injured the diaphragm in the many operations he had performed, although he always selected the eighth interspace in the scapular line for his incision; this position presented a great advantage over those incisions made on the anterior or lateral chest wall, in the fact that here the ribs were so fixed by their vertebral attachments that there was not the danger of the tube being occluded by the ribs falling together, which Mr. Thornley Stoker mentioned was so frequent in the cases where the incisions were made more anteriorly.

The only point in Sir William Stokes's paper with which he (Mr. Heuston) was not, from his practical experience, inclined to agree, was in the utility of frequent washings of the pleural cavity; and always, in recent cases, he employed only one washing—viz., at the time of the operation, to remove any semi-solid lymph which might be within the pleural cavity, and he had found, by the occasional introduction of an antiseptic which dissolved slowly within the cavity, that even where the discharge is fœtid at the time of operation, it becomes quite sweet within a few days, never to resume its fœtid character.

Mr. Thornley Stoker and **Mr. Doyle** also spoke.

The Section then adjourned.

SECTION OF MEDICINE.

President—Walter G. Smith, M.D.; President of the Royal College of Physicians of Ireland.

Sectional Secretary—A. N. Montgomery, M.R.C.P.I.

Friday, Nov. 18, 1892.

The President in the Chair.

Exhibits.

Dr. O'Carroll exhibited a case of Saturnine Encephalopathy.

The President's Address.

The President said:—It would not, I think, be fitting at the opening meeting to interpose at any length between the Section and those who are ready to contribute formal papers. I shall, therefore, make my preface a short one.

This large gathering justifies the hope that the attendance at the Sectional meetings of this our tenth Session will be correspondingly good, and that, as the months pass by there will be a well-sustained interest in our proceedings. Looking back upon the records of the past Session, I note with pleasure the variety and interest of the communications which came before us. A feature of our proceedings, which all will agree in considering to be an excellent one, is the exhibition, prior to the meeting in this hall, of patients suffering from rare or obscure affections, and by this means individual experience is widened, and diagnosis is sharpened by the friendly criticism of the members. We had brought under our notice examples of ichthyosis, xerodermia, dermatitis exfoliativa, and universal alopecia. A few interesting pathological specimens were shown—*e.g.*, perforation of the bowel, and a case of stricture of the sigmoid flexure. Of the written papers, three dealt with that disease of ever-present interest—enteric fever—and an instructive and lively discussion was held as to the dietetic management of this affection, and as to how far recent views upon its pathology should influence our treatment of it. A remarkable case of opium-poisoning justly excited a good debate, and the treatment adopted was happily successful in saving life.

Among the miscellaneous subjects which formed part of our material, I will remind you of papers upon the influence of climate in relation to anæsthetics; upon recent aids to the diagnosis and treatment of diseases of the stomach; a case of double acute pneumonia treated by inhalation of oxygen; stricture of the sigmoid flexure of colon; detachment of the retina; and upon the ætiology of diseases of the skin. Two of the papers read deserve mention, as raising medico-chirurgical questions of the deepest practical importance. Few subjects are better worth threshing out than that of the respective limits of medical treatment and surgical intervention in acute abdominal affections, involving the risk or actual occurrence of perforation. An excellent debate was evoked, and although the discussion cannot be said to be yet closed, it will be allowed that we have gained much fresh light, and that many lives are now saved by timely and well-planned operative aid.

Saturnine Encephalopathy.

DR. O'CARROLL related the history of four cases of cerebral lead-poisoning, one of which was fatal. Two non-fatal cases occurred in Civil Servants who used lead-containing hair-dyes. One of these, aged about sixty-two, had a slight hemiparesis, which passed away in a couple of days and recurred in about a fortnight. There were also some visual amnesia and some amblyopia. On discontinuing the use of the hair-dye all the symptoms gradually disappeared. The other case was much more severe. The patient had, about once every three months over a period of three years, attacks of violent headache, coma, delirium, and sometimes slight convulsions, followed, as a rule, by a period of insanity. The coma lasted from one to six days, the insanity from one to six weeks. The delusions on some occasions were of the grandiose character, commonly associated with general paralysis of the insane. The case was from time to time diagnosticated as cerebritis, diffused meningitis, general paralysis, and even, on some occasions, hysteria. After the patient had suffered thus for two years it was surmised that the symptoms must be due to some cause operating regularly from outside, and a hair-dye, found to contain lead, was fixed upon as a possible source of trouble. From the date of the disuse of the hair-dye the patient's symptoms underwent a gradual involution. The coma never appeared again, the headache gradually became less frequent and severe, the mental condition became for a time melancholic and then returned to normal health; and he is now, nine years after his first attack, in perfect health. One morbid condition alone remains—namely, that he gets occasional attacks of *petit mal*, from which he never suffered till this illness. The fatal case was that of a plumber who had been in good health up to about three months before death. He at first showed slight mental peculiarities, had headache, and was forgetful. Severe symptoms began with an epileptoid attack, followed by spasmodic contractions of the muscles of the right side, repeated sixty times a minute, with right hemianopia. The mind remained pretty clear, but there was total loss of the sense of personal localisation. In another fortnight he had epileptoid convulsions during about twenty-four hours, followed by partial paresis of the left side. Finally he died in a further attack of frequently-repeated convulsions. At the autopsy the arachnoid was seen to be somewhat distended with fluid, so that the cerebral fissures seemed to be occupied by cylindrical or spherical cysts. On removal of the arachnoid, after hardening in Müller's fluid, the convolutions were found separated by wide fissures, while at various parts portions of the convolutions were depressed or apparently punched out. In the spinal cord a somewhat similar condition obtained in the lower dorsal region, where the main strands of fibres seemed partially separated from one another by a dissecting sub-arachnoid effusion. Professor Lapper found lead in the liver, the kidney, and the spinal cord. Dr. H. C. Earl made an examination of the brain cortex at one of the convolutional depressions, and reported the presence of a curious black pigmentation of the neuroglia cells, and a similar staining of the neighbouring capillaries; this staining involved only part of the sections.

The author discussed the description of saturnine encephalopathy given by Tanquerel des Planches and the pathology as suggested by later German writers. With regard to the view that the symptoms suggest a form of uræmic poisoning, he pointed out that only one of his three cases, and that the least severe, had any sign of renal trouble; while the pathological observations recorded by Tanquerel and subsequent authors, including the fatal case just reported, point to organic changes inthe brain or its surroundings as at least the commonest cause of the grave forms of encephalopathy. Dr. O'Carroll suggested the extension of the term saturnine encephalopathy, so as to include not merely the coma, convulsions, and delirium, of Tanquerel des Planches, but all the morbid phenomena due to the influence of lead upon the brain.

Dr. **Little** considered the interesting paper they had just heard should remind the members of the necessity of not forgetting lead-poisoning as a possible cause of otherwise inexplicable nervous symptoms. He mentioned the case of a gentleman who some years ago consulted him for a headache. He (Dr. Little) failed to relieve him, but subsequently heard that the patient lost all his headache when, acting on the advice of a hairdresser, he gave up the hair-dye he was in the habit of using.

Dr. Falkiner said that the principal substances which were used in hair-dyes were nitrate of silver, pyrogallic acid, and acetate of lead with sulphur. He had discovered that nitrate of bismuth—a body insoluble in water owing to the formation of the subnitrate—was soluble when rubbed up with glycerine. This substance dyed hair a beautiful rich black.

Mr. Doyle wished to ask Dr. O'Carroll what were the colours produced by the dyes his patients had used. One of his patients, who had symptoms of neuritis and delirium, used a hair dye which stained the hair of a bluish tint, and which on analysis was shown to contain copper. On ceasing to use the hair-dye the patient recovered.

Dr. H. C. Tweedy asked Dr. O'Carroll did he not think it a remarkable thing that the patient who stopped using the hair-dye in 1886 should up to the present have occasional mild attacks, and that the poison should have taken such a length of time to be eliminated. He wanted to know whether there was any way in which lead might still be absorbed in his case, or whether the later symptoms might have another cause.

Dr. Quinlan said he had seen a case like one of Dr. O Carroll's. In this case infection was caused by the use of a lead comb, and the symptoms disappeared after the comb ceased to be used.

The President mentioned the following two cases which had come under his notice. In the first case saturnine symptoms were present. The patient was a manufacturer of sugar-sticks, and he used chrome yellow in preparing them. Thus the introduction of lead into his system was accounted for. The second case was that of a man who had become incapacitated for his duty, and who was pensioned off on account of a diagnosis of lateral sclerosis. Dr. Smith noticed he had a blue line on his gums. He also found out that the man had a habit of constantly chewing a pellet of lead. Slow absorption took place, and he developed spinal symptoms. He was treated with iodide of potassium and magnesium sulphate, and got well. Dr. O'Carroll, in his paper, made no mention of the spinal cord or the peripheral nerves being affected. Lead and other elements of high atomicity, such as silver, mercury, and arsenic, are very poisonous to the nervous system; they act as protoplasmic poisons. Silver and lead are in many respects analogous. Both form dense albuminates with the tissues, but there is this point of difference—the silver albuminates are insoluble in chlorides and also in lactic acid, while the lead albuminates are soluble in the alkaline and acid fluids of the body On account of this lead-poisoning is more easily caused. The lead is a direct protoplasmic poison, and a little metallic poison does a great deal of mischief in the brain. Of late years a certain quantity of lead has been in some cases abstracted from the cerebrum and cerebellum. The metal forms a direct combination with the albumin. Another proof of its direct action on the nervous elements is shown by histological examination, which reveals certain pigmentary changes. In addition to this, there are certain bad effects on the general health. These two things are sufficient to account for the seriousness of the phenomena and also for their instability witnessed in cases of lead-poisoning. As regards treatment, iodide of potassium does no real harm by increasing the solubility of lead already deposited in the system. The quantity is very small, and the increased quantity in solution for a couple of days would not signify. Lead is not excreted by the kidneys to any practicable extent, but it is excreted by the intestines, and it is very liable to be reabsorbed. Consequently, it is always well to combine with the iodide of potassium a saline purgative, such as magnesium sulphate.

Dr. O'Carroll, in reply, said that he did not know whether copper was present in the hair-dyes his patients had used. The colours produced by them were the ordinary colours. In reply to Dr. Tweedy, he quoted described cases in which the patients had recurrent attacks several years after removal from all chance of infection. Might not some structural changes, or some functional habit, have been produced from which it would take a long time to recover. In reply to the President, he said that he had been laying stress on a cerebral lesion but still he had hinted at spinal lesions, as when he said that one of his patients had symptoms resembling those of locomotor ataxy.

The Section then adjourned.

FICTITIOUS TEMPERATURE.

Dr. Ali Krogins, Physician to the Helsingborg Surgical Hospital, reports an epidemic of sham temperature amongst patients in his charge. Three men and one woman either simulated a non-existent fever or exaggerated their actual high temperature by rubbing the bulbs of the thermometers in the fold of their dress, or by tapping with the finger on the upper end of the instrument so as to jerk up the register. The fictitious temperatures were carefully adjusted so as to simulate enteric fever, the evening temperature being made higher than the morning. By using two thermometers simultaneously, one in the rectum and one in the axilla, and by careful watching the fraud was discovered; and the "weaker vessel" confessed that she learned the trick from a woman in another town.

HUNYADI JÁNOS WATER.

The *St. Louis Medical and Surgical Journal* summarises the results of Dr. Michael V. Sirotkin's investigations into the physiological effects of this mineral water, with especial reference to its influence on the assimilation of fats. His conclusions are:—That the assimilation of fats is invariably lowered during the use of the water, in doses of 200 c.c. twice daily for twelve days; the weight of the body is diminished; the quantity of the fæces increased; the urine is less, with a higher specific gravity; that nitrogenous metamorphosis is probably intensified; and that the use of the water is likely to prove a valuable part of the treatment of obesity.

HICCOUGH.

Dr. Belt states (in the *Medical Record*) that he stopped obstinate hiccough, which had lasted six days, following striking the head against a wall, by pressure with his thumbs upon the supra-orbital nerves. After fifteen hours the hiccough returned, was again checked for nine, and after a third application of the treatment recurred no more.

SANITARY AND METEOROLOGICAL NOTES.

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Vital Statistics

For four Weeks ending Saturday, November 5, 1892.

The deaths registered in each of the four weeks in the sixteen principal Town Districts of Ireland, alphabetically arranged, corresponded to the following annual rates per 1,000:—

Towns	Weeks ending				Towns	Weeks ending			
	Oct. 15.	Oct. 22.	Oct. 29.	Nov. 5.		Oct. 15.	Oct. 22.	Oct. 29.	Nov. 5
Armagh -	28·0	21·0	28·0	21·0	Limerick -	19·6	16·8	19·6	11·2
Belfast -	19·6	22·8	23·0	30·4	Lisburn -	12·8	8·5	8·5	4·3
Cork -	18·0	21·5	16·6	22·1	Londonderry	12·6	9·4	22·0	14·1
Drogheda	8·8	26·4	22·0	35·1	Lurgan -	13·7	9·1	9·1	9·1
Dublin -	20·3	18·8	25·4	27·3	Newry -	28·2	12·1	16·1	28·2
Dundalk -	25·1	20·9	16·8	8·4	Sligo -	10·2	10·2	30·5	30·5
Galway -	15·1	11·3	18·9	11·3	Waterford -	22·5	17·5	22·5	30·0
Kilkenny	4·7	23·6	28·3	28·3	Wexford -	22·6	18·1	27·1	31·6

In the week ending Saturday, October 15, 1892, the mortality in thirty-three large English towns, including London (in which the rate was 17·1), was equal to an average annual death-rate of 17·3 per 1,000 persons living. The average rate for eight principal towns of Scotland was 18·0 per 1,000. In Glasgow the rate was 19·2, and in Edinburgh it was 17·7.

The average annual death-rate represented by the deaths registered during the week in the sixteen principal town districts of Ireland was 19·2 per 1,000 of the population, according to the Census of 1891.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 1·5 per 1,000, the rates varying from 0·0 in ten of the districts to 5·7 in Belfast—the 87 deaths from all causes registered in that district comprising 1 from diarrhœa. Among the 98 deaths from all causes registered in Belfast are 1 from measles, 1 from scarlatina, 1 from whooping-cough, 1 from diphtheria, 3 from enteric fever, and 5 from diarrhœa. The 26 deaths in Cork comprise 1 from typhus and 1 from diarrhœa. The 9 deaths in Waterford comprise 2 from diarrhœa.

In the Dublin Registration District the registered births amounted to 126—56 boys and 70 girls; and the registered deaths to 139—68 males and 71 females.

The deaths, which are 23 under the average number for the corresponding week of the last ten years, represent an annual rate of mortality of 20·7 in every 1,000 of the population. Omitting the deaths (numbering 3) of persons admitted into public institutions from localities outside the district, the rate was 20·3 per 1,000. During the first forty-one weeks of the current year the death-rate averaged 30·4, and was 3·0 over the mean rate in the corresponding period of the ten years 1882–1891.

Only 9 deaths from zymotic diseases were registered, being 5 under the low number for the preceding week, and 17 below the average for the 41st week of the last ten years. They comprise 4 from enteric fever and 3 from diarrhœa.

The number of cases of enteric fever admitted to hospital is 12, being 6 under the admissions for the preceding week and 15 under the number for the week ended October 1. Twenty-three enteric fever patients were discharged, 1 died, and 109 remained under treatment on Saturday, being 12 under the number in hospital at the close of the preceding week.

The hospital admissions for the week include, also, 2 cases of scarlatina, but no cases of either measles or typhus were received: 1 case of measles and 17 cases of scarlatina remained under treatment in hospital on Saturday.

The number of deaths from diseases of the respiratory system registered during the week is 21, being 1 under the number for the preceding week and 5 below the average for the 41st week of the last ten years. The 21 deaths comprise 9 from bronchitis, 9 from pneumonia or inflammation of the lungs, and 1 from pleurisy.

In the week ending Saturday, October 22, the mortality in thirty-three large English towns, including London (in which the rate was 17·7), was equal to an average annual death-rate of 18·0 per 1,000 persons living. The average rate for eight principal towns of Scotland was 19·0 per 1,000. In Glasgow the rate was 18·8, and in Edinburgh it was 25·1.

The average annual death-rate in the sixteen principal town districts of Ireland was 19·3 per 1,000 of the population, according to the Census of 1891.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 1·1 per 1,000, the rates varying from 0·0 in eleven of the districts to 17·6 in Drogheda—the 6 deaths from all causes registered in that district comprising 2 from measles and 2 from enteric fever. Among the 114 deaths from all causes registered in Belfast are 2 from measles, 3 from enteric fever, and 1 from diarrhœa.

In the Dublin Registration District the registered births amounted to 175—79 boys and 96 girls; and the registered deaths to 130—64 males and 66 females.

The deaths, which are 31 under the average number for the corresponding week of the last ten years, represent an annual rate of mortality of 19·4 in every 1,000 of the population. Omitting the deaths (numbering 4) of persons admitted into public institutions from localities outside the district, the rate was 18·8 per 1,000. During the first forty-two weeks of the current year the death-rate averaged 30·2, and was 2·9 over the mean rate in the corresponding period of the ten years 1882–1891.

Eleven deaths from zymotic diseases were registered, being 2 over the low number for the preceding week, but 13 under the average for the 42nd week of the last ten years. They comprise 1 from influenza, 1 from whooping-cough, 2 from enteric fever, and 4 from diarrhœa.

Thirty-one cases of enteric fever were admitted to hospital against 12 for the preceding week, 18 for the week ended October 8, and 27 for the week ended October 1. Eleven enteric fever patients were discharged, 2 died, and 127 remained under treatment on Saturday, being 18 over the number in hospital at the close of the preceding week.

The hospital admissions for the week include, also, 4 cases of scarlatina: 17 cases of the disease remained under treatment in hospital on Saturday.

Twenty-five deaths from diseases of the respiratory system were registered, being 4 over the number for the preceding week, but 1 under the average for the 42nd week of the last ten years. They consist of 15 from bronchitis, 9 from pneumonia or inflammation of the lungs, and 1 from croup.

In the week ending Saturday, October 29, the mortality in thirty-three large English towns, including London (in which the rate was 18·5), was equal to an average annual death-rate of 19·5 per 1,000 persons living. The average rate for eight principal towns of Scotland was 20·3 per 1,000. In Glasgow the rate was 22·5, and in Edinburgh it was 19·6.

The average annual death-rate represented by the deaths registered in the sixteen principal town districts of Ireland was 22·8 per 1,000 of the population based on the Census of 1891.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 1·1 per 1,000, the rates varying from 0·0 in ten of the districts to 5·1 in Sligo—the 6 deaths from all causes registered in that district comprising 1 from whooping-cough. Among the 115 deaths from all causes registered in Belfast are 1 from diphtheria, 1 from enteric fever, and 3 from diarrhœa. The 14 deaths in Limerick comprise 2 from typhus, and the 14 deaths in Londonderry comprise 2 from whooping-cough.

In the Dublin Registration District the registered births amounted to 184—102 boys and 82 girls; and the registered deaths to 173—92 males and 81 females.

The deaths, which are 8 over the average number for the corresponding week of the last ten years, represent an annual rate of mortality of 25·8 in every 1,000 of the population. Omitting the deaths (numbering 3) of persons admitted into public institutions from localities outside the district, the rate was 25·4 per 1,000. During the first forty-three weeks of the current year the death-rate averaged 30·1, and was 2·9 over the mean rate in the corresponding period of the ten years 1882–1891.

Seventeen deaths from zymotic diseases were registered, being 6 over the low number for the preceding week, but 7 under the average for the 43rd week of the last 10 years. They comprise 1 from influenza, 1 from whooping-cough, 6 from enteric fever, 1 from diarrhœa, and 3 from erysipelas.

Thirty-two cases of enteric fever were admitted to hospital against 31 admissions in the preceding week: 27 enteric fever patients were discharged, 4 died, and 128 remained under treatment on Saturday, being 1 over the number in hospital at the close of the preceding week.

The hospital admissions for the week include, also, 4 cases of measles, 6 of scarlatina, and 1 case of typhus: 4 cases of measles, 19 cases of scarlatina, and 1 case of typhus remained under treatment in hospital on Saturday.

Forty-one deaths from diseases of the respiratory system were registered, being 16 over the number for the preceding week, and 10 over the average for the 43 week of the last ten years. They comprise 25 from bronchitis, 11 from pneumonia or inflammation of the lungs, and 1 from croup.

In the week ending Saturday, November 5, the mortality in thirty-three large English towns, including London (in which the rate was 18·1), was equal to an average annual death-rate of 19·6 per 1,000 persons living. The average rate for eight principal towns of Scotland was 22·9 per 1,000. In Glasgow the rate was 23·2, and in Edinburgh it was 26·1.

The average annual death-rate in the sixteen principal town districts

of Ireland was 25·8 per 1,000 of the population, according to the Census of 1891.

The deaths from the principal zymotic diseases registered in the sixteen districts were equal to an annual rate of 1·5 per 1,000, the rates varying from 0·0 in seven of the districts to 5·1 in Sligo—the 6 deaths from all causes registered in that district comprising 1 from simple continued fever. Among the 152 deaths from all causes registered in Belfast are 1 from whooping-cough, 1 from diphtheria, 2 from enteric fever, and 4 from diarrhœa.

In the Dublin Registration District the registered births amounted to 154—93 boys and 61 girls; and the registered deaths to 191—94 males and 97 females.

The deaths, which are 14 over the average number for the corresponding week of the last ten years, represent an annual rate of mortality of 28·5 in every 1,000 of the population. Omitting the deaths (numbering 8) of persons admitted into public institutions from localities outside the district, the rate was 27·3 per 1,000. During the first forty-four weeks of the current year the death-rate averaged 30·0, and was 2·8 over the mean rate in the corresponding period of the ten years 1882–1891.

The number of deaths from zymotic diseases registered is 19, being 2 over the number for the preceding week, but 8 under the average for the 44th week of the last ten years. The 19 deaths comprise 3 from scarlet fever (scarlatina), 1 from typhus, 9 from enteric fever, and 1 from erysipelas.

The number of cases of enteric fever admitted to hospital is 22, showing a decline of 10 as compared with the admissions for the preceding week. Eleven enteric fever patients were discharged, 5 died, and 134 remained under treatment on Saturday, being 6 over the number in hospital at the close of the preceding week.

The hospital admissions for the week include, also, 7 cases of scarlatina: 24 cases of the disease remained under treatment in hospital on Saturday.

Thirty-five deaths from diseases of the respiratory system were registered, being 3 over the average for the corresponding week of the last ten years, but 6 under the number for the week ended October 29. They comprise 21 from bronchitis, 8 from pneumonia or inflammation of the lungs, and 1 from croup.

METEOROLOGY.

Abstract of Observations made in the City of Dublin, Lat. 53° 20′ *N., Long.* 6° 15′ *W., for the Month of October,* 1892.

Mean Height of Barometer,	29·759 inches.
Maximal Height of Barometer (on 18th, at 9 p.m.),	30·422 „
Minimal Height of Barometer (on 29th, at 7 a.m.),	28·883 „
Mean Dry-bulb Temperature,	43·9°.
Mean Wet-bulb Temperature,	42·3°.
Mean Dew-point Temperature,	40·5°.
Mean Elastic Force (Tension) of Aqueous Vapour,	·255 inch.
Mean Humidity,	88·3 per cent.
Highest Temperature in Shade (on 28th),	58·2°.
Lowest Temperature in Shade (on 26th),	28·3°.
Lowest Temperature on Grass (Radiation) (on 26th),	23·8°.
Mean Amount of Cloud,	50·7 per cent.
Rainfall (on 17 days),	2·535 inches.
Greatest Daily Rainfall (on 14th),	·784 inch.
General Directions of Wind,	N.W., W.

Remarks.

October, 1892, proved to be the coldest October recorded in Dublin within at least twenty-eight years. The month was characterised by na overwhelming prevalence of northerly (N.W. to N.E.) winds in Ireland, and by an excessive rainfall in England—particularly in the N.E., E.S.E., and S. districts of that country. In London the rainfall was 4·07 inches, at Yarmouth it was 8·63 inches. At Parsonstown, on the other hand, it was only 2·05 inches. Only during a short interval between the 26th and the 29th were the polar winds replaced by a strong southerly current and high temperatures in Ireland. So sudden was the upward movement of the thermometer at the time mentioned, that temperature stood 30° or upwards higher on the 27th than it had been on the 26th, and in Dublin the air temperature on the 27th was 14° above that of the water in the Vartry mains (58° compared with 44°).

In Dublin the arithmetical mean temperature (44·8°) was much below the average (49·7°); the mean dry bulb readings at 9 a.m. and 9 p.m. were 43·9°. In the twenty-seven years ending with 1891, October was coldest in 1880 (M. T. = 45·4°), and in 1885 (M.T. = 45·5°), and warmest in 1876 (M.T. = 53·1°). In 1886, the M. T. was as high as 52·0°; in 1879 (the "cold year"), it was 49·7°; in 1887, it was as low as 47·3°; in 1888, it was 49·1°; in 1889, it was only 48·1°; in 1890, it was 51·7°, and in 1891, it was 49·5°. October, 1892, has thus beaten the record for coldness.

The mean height of the barometer was 29·759 inches, or 0·081 inch below the corrected average value for October—namely, 29·840 inches. The mercury rose to 30·422 inches at 9 p.m. of the 18th, and fell to 28·883 inches at 7 a.m. of the 29th. The observed range of atmospher-pressure was, therefore, as much as 1·539 inches—that is, a little more than an inch and a half.

The mean temperature deduced from daily readings of the dry bulb thermometer at 9 a.m. and 9 p.m. was 43·9°, or 9·7° below the value for September, and 15·1° below that for August, 1892. The arithmetical mean of the maximal and minimal readings was 44·8°, compared with a twenty-five years' average of 49·7°. Using the formula, *Mean Temp.* = *Min.* + (*Max.*—*Min.* × ·486), the value was 44·6°, or as much as 4·9° below the average mean temperature for October, calculated in the same way, in the twenty-five years, 1865–89, inclusive (49·5°). On the 28th, the thermometer in the screen rose to 58·2°—wind, S.S.W.; on the 26th the temperature fell to 28·3°—wind, calm. The minimum on the grass was 23·8°, also on the 26th—on four nights the thermometer sank to or below 32° in the screen, and on thirteen nights frost occurred on the grass.

The rainfall was 2·535 inches, distributed over 17 days—the rainfall was considerably, while the rainy days were slightly, below the average. The average rainfall for October in the twenty-five years, 1865–89, inclusive, was 3·106 inches, and the average number of rainy days was 17·6. In 1880 the rainfall in October was very large—7·358 inches on 15 days. In 1875, also, 7·049 inches fell on 26 days. On the other hand, in 1890, only ·639 inch fell on but 11 days, in 1884 only ·834 inch was measured on but 14 days; and in 1868 only ·856 inch on 15 days. In 1888 the rainfall was 1·227 inches on 16 days, and in 1889 no less than 4·853 inches fell on 22 days. In 1891, 3·590 inches fell on 13 days. From these figures it will be seen that October, 1890, proved the driest on record for more than a quarter of a century at least.

A lunar halo was seen on the 8th. High winds were noted on 8 days, and attained the force of a gale on four occasions—the 9th, 14th, 26th, and 27th. The atmosphere was more or less foggy in Dublin on the 11th, 18th, 24th, 25th, and 26th. Lightning was seen on the evening of the 21st, and thunder and lightning occurred on the afternoon of the 2nd. Hail fell on the 1st, 2nd, 14th, 16th, 21st, 22nd, and 25th.

On Saturday, the 1st, hail fell, and the cold became severe for the season.

Cold, inclement rainy weather was experienced in all parts of the British Islands as well as in many parts of the Continent throughout the week ended Saturday, the 8th. The centres of complex and rather deep atmospherical depressions were found over Great Britain and the North

Sea. These moved slowly—for the most part in a northerly direction—and, as they passed, large quantities of cold rain and hail fell, while thunder and lightning occurred from time to time. As Ireland lay to the westward of the central areas of low pressure, N.W. and N. winds were prevalent in this country and temperature was particularly low for the time of year. On Sunday, the 2nd, thunder and lightning occurred in many places—in Dublin a vivid flash of lightning and a loud peal of thunder were followed by a heavy shower of rain and hail at 4 45 p.m. Monday was fair to cloudy, but rain fell heavily at night. The next two days were cold but fine in Dublin, but in the 24 hours ending 8 a.m. of Wednesday 2·6 inches of rain were measured at Lynsted, in North Kent; 1·6 inches at Yarmouth; and 1·5 inches at Dungeness. At 6 p.m. of Wednesday the barometer read only 28·88 inches at Nairn in Scotland In Dublin the mean atmospherical pressure was 29·539 inches. The barometer rose to 29·797 inches at 9 a.m. of Monday (wind, W.N.W.) and fell to 29·317 inches at 4 p.m. of Wednesday (wind, W.). The corrected mean temperature was 46·7°. The mean dry bulb readings at 9 a.m. and 9 p.m. were 46·2°. The shade thermometers rose to 54·7° on Monday and fell to 39·0° on Saturday. The rainfall amounted to ·396 inch on five rainy days. On Monday the measurement was ·161 inch. Thunder, lightning, and hail occurred on Sunday. The prevailing wind was northwesterly. At Yarmouth 3·88 inches of rain fell in the seven days ending 8 a.m. of Saturday.

Both at the beginning and at the close of the week ended Saturday, the 15th, the weather was broken and rough; in the middle of the week it was quiet and fine, although very cold for the time of year. On Sunday, the 9th, the centre of a deep depression, in which the barometer was below 28·9 inches (28·84 inches at Wick and Nairn at 8 a.m.) lay over Scotland. Baric gradients for N. to N.W. winds were very steep over Ireland, where, in consequence, a fresh to strong gale from the points named prevailed. Scarcely any rain fell in Dublin in connection with this gale. During the next two days the disturbance travelled slowly eastwards, and became shallower. In its rear, an area of high atmospherical pressure spread in from the Atlantic, so that on Wednesday evening the isobar of 30·2 inches embraced the whole of Ireland. At this time a new system of broken weather was developing over France, where heavy rains fell in connection with a low pressure system of ever increasing intensity. By 8 a.m. of Friday the centre of this cyclone had reached the Channel Islands by an erratic course, and north-easterly gales and heavy rains set in on the east coast of Ireland as well as in many parts of England. In consequence both Friday and Saturday turned out dull and wet, while temperature rose several dagrees. At York 1·73 inches of rain fell in the 24 hours ending 8 a.m. of Saturday. In Dublin the mean height of the barometer was 29·943 inches, pressure ranging from 29·344 inches at 7 30 a.m. of Sunday (wind, W.N.W.), to 30·218 inches at 9 p.m. of Wednesday (wind, N.W.). The corrected mean temperature was 46·2°. The mean dry bulb temperature at 9 a.m. and 9 p.m. was 45·8°. On Saturday the shade thermometer rose to 52·4°; on Wednesday they fell to 38·1°. The rainfall was 1·249 inches on three days, ·784 inch being measured on Friday and ·360 inch on Saturday. The prevailing winds were W.N.W. and N.E.

The chief feature in the weather of the week ended Saturday, the 22nd, was the extraordinary intensity of the cold, considering the time of year—on every night the thermometer in the screen fell below 42°, and the grass minimum was below 32° on five nights; on the other hand, only once (on Thursday) did the thermometer in the screen rise above 50° (to 51·7°). At the beginning, the depression which had caused such bad weather during the previous three days had returned to its original situation over the W. of France and the Bay of Biscay, having all but completed a circle in the course of its erratic wanderings. Cold, but moderating, N. and N.E. winds were prevalent in the British Islands, where showers of rain and hail fell at exposed stations. An anticyclone now spread in from the Atlantic, reaching its fullest development on Wednesday morning, when the barometer read 30·46 inches at Valentia Island, in Kerry. Under the influence of this system temperature became very low at night, the thermometer falling on Tuesday night to 26° at Loughborough, 28° at Parsonstown and even Valentia, and 30° at York and Oxford. A new depression now began to form over the North Sea, and this caused a renewal of showers on Friday and Saturday, the precipitation taking the form of sleet and hail in many places. On Friday evening vivid lightning was seen over the Irish Sea. In Dublin the mean height of the barometer was 30·082 inches, pressure ranging from 30·422 inches at 9 p.m. of Tuesday (wind, N.W.) to 29·733 inches at 9 p.m. of Saturday (wind also N.W.). The corrected mean temperature was only 42·0°, or 7° below the average. The mean dry bulb temperature at 9 a.m. and 9 p.m. was 41·0°. On Thursday the thermometers in the screen rose to 51·7°, having fallen to 32·0° on the previous day. The rainfall was ·194 inch on four days, ·112 inch being measured on Saturday. Hail fell on Sunday, Friday, and Saturday. Lightning was seen on Friday evening. The prevailing wind was N.W.

A very decided change in the weather occurred in the middle of the week ended Saturday, the 29th. Quite suddenly warmth, rain, and high southerly winds took the place of the frosts, cold showers, and northerly winds of the earlier part of the week, conditions by which the advent of mid-winter seemed to have been anticipated. On Sunday a large area of low pressure lay over the North Sea—frost prevailed in Ireland, while strong N.W. winds and gales were blowing in Great Britain, with showers of hail and sleet or snow at many British stations. Monday was a quiet winter's day. Early on Tuesday heavy rain fell in the S.W. of England in connection with a depression which advanced quickly over France in an easterly direction. On this day there were light showers of cold rain and hail in Dublin, but the weather was generally dry. At night intense frost for the time of year occurred in many places—the shade thermometer fell to 28° in Dublin and London, 27° at Shields, 26° at Cambridge and Leith, 25° at Oxford and York, 24° at Parsonstown, 22° at Loughborough, and 21° at Donaghadee. All was changed on Wednesday, when the first of a series of deep depressions edged in over Ireland from the S.W. Temperature rose so fast, that the maximum on Thursday was 30° or upwards above the minimum on Wednesday. A strong southerly gale blew on Wednesday night in the Irish Sea, and warm rains fell in abundance from time to time up to Saturday, when the wind veered to W. and temperature fell. In Dublin the mean height of the barometer was 29·527 inches, pressure ranging from 29·977 inches at 9 p.m. of Tuesday (wind N.W.) to 28·883 inches at 7 a.m. of Saturday (wind S.E. light). The corrected mean temperature was 43·9°—that of the first four days being 38·0°, that of the last three days being 51·7°. The mean dry bulb reading at 9 a.m. and 9 p.m. was 43·3°. On Wednesday the screened thermometers fell to 28·3°, on Friday they rose to 58·2°. The rainfall was ·634 inch on four days, ·276 inch being measured on Friday. The prevailing winds were—first, W.N.W., then S.S.W., and finally W.

The last two days were cool and fair in Ireland—unsettled with heavy rain in the S. and S.E. of England.

The rainfall in Dublin during the ten months ending October 31st has amounted to 22·445 inches on 167 days, compared with 12·366 inches on 123 days during the same period in 1887, 19·219 inches on 147 days in 1888, 24·789 inches on 169 days in 1889, 21·494 inches on 162 days in 1890, 21·610 inches on 148 days in 1891, and a 25 years' average of 22·840 inches on 160·4 days.

At Knockdolian, Greystones, Co. Wicklow, the rainfall amounted to 3·340 inches on 15 days. Of this quantity ·900 inch fell on the 26th, ·710 inch on the 14th, and ·650 inch on the 27th. The rainfall in October, 1890, was only ·600 inch distributed over 13 days. Of this quantity ·160 inch fell on the 6th, and ·120 inch on the 14th. The rainfall at Greystones in October, 1889, was no less than 6·935 inches on 22 days, or more than 11 times as great as the fall in October, 1890. In 1891, 5·122 inches fell on 14 days.

From January 1st, 1892, up to October 31st, rain fell at Knockdolian, Greystones, on 140 days to the total amount of 27·223 inches.

PERISCOPE.

THE MEDICAL MAGAZINE.

We have received the first numbers of this monthly, published by Messrs. Southwood, Smith, & Co., London. It will be written for medical men by medical men; will consist of original articles (for the most part signed), reviews, and editorial notes; and will give rather broad summaries of results of investigations than "a dry chronicle of minute details." "Those who wish to describe individual cases of interest, or to bring before us the particulars of their labours in the laboratory or by the bedside"—will have to go elsewhere. The first number contains eight original articles and three reviews. Of the former we have read with special interest Dr. Charles Creighton's sanitary history of Chester from mediæval to modern times, and Dr. Maudsley's paper on suicide in simple melancholy. Paper and typography are superior to what we are accustomed to expect in English medical periodicals; and, on the whole, our contemporary's *dêbut* is promising.

BROMAMIDE.

This new analgesic bromamide has the formula $C_6H_2Br._3N\,H+HB$. It occurs in the form of fine needle-like crystals, colourless, tasteless, odourless, slightly soluble in cold alcohol, soluble in 16 parts of boiling alcohol, soluble in ether, chloroform, and in fixed oils. The dose, given in capsules or suspended in some vesicle, varies from 0 gr. 75 to 1 gr. 25 for an adult.—*Répertoire de Pharmacie*, No. 5.

PERIOD OF HUMAN GESTATION.

In the *Journal of the American Medical Association* of 18th June, Dr. T. Ridgway-Barker, of Philadelphia, published a paper "On the Relation of the Duration of Gestation to Legitimate Birth." He had noted forty-two cases in which gestation had fallen considerably below or risen considerably above what is usually taken as the normal duration, having taken every precaution possible against the fallacies which beset the subject. "Of the total number confined twenty-seven were cases marked by brevity, the gestation varying from two hundred and forty-two to two hundred and seventy-four days, while in the remaining fifteen cases the period ranged from two hundred and eighty-nine days to three hundred and twenty-three days. There were between two hundred and ninety and three hundred and twenty-three days, twelve cases; and over three hundred days, six cases. . . . The minimum was two hundred and fifty-five days; the maximum three hundred and twenty-three."

INDEX

TO THE NINETY-FOURTH VOLUME.

"A.B.C." visiting list for 1893, *Rev.*, 428.
Academy of Medicine in Ireland, Royal, Transactions of the, 76, 166, 264, 347, 447, 524.
Acromegaly, 518.
Actinomycosis, Dr. J. Alfred Scott on, 525.
Adams, Mr. William, contraction of the fingers and "hammer toe," *Rev.*, 235.
Adenoma of the breast in childhood, Mr. R. G. Patteson on, 166.
Alcoholism, 286—as a cause of general paralysis, 513.
Allingham, Mr. Herbert W., colotomy, *Rev.*, 229.
Alopecia areata, treatment of, 191.
Althaus, Dr. Julius, influenza, *Rev.*, 341.
Alvarenga prize of the College of Physicians of Philadelphia, 523.
American—Physicians, Transactions of the Association of, *Rev.*, 220—Orthopædic Association, Transactions of the, *Rev.*, 244.
Anæsthetics, by Dr. Dudley W. Buxton, 378.
Aneurysm, aortic, opening into left lung and pleura, Dr. J. W. Moore on, 496, 525.
Aneurysm or abscess, Mr. Barton on, 169.
Annales de la Policlinique de Lille, 190.
Appendicitis, 172.
Appendix, vermiform, disease of the, Dr. C. B. Ball on, 172, 193.
Archives cliniques de Bordeaux, 350.
Ashby, Dr. Henry, and Mr. G. A. Wright, diseases of children, *Rev.*, 507.
Athetosis, 519.
Atkins, Dr. Ringrose, report on nervous and mental diseases, 436, 512.
Atthill, Dr. Lombe, dilatation of the uterus, 451.
Aulde, Dr. J., materia medica and therapeutics, *Rev.*, 53.
Australasian Medical Directory and Handbook, *Rev.*, 509.

Bacilli of typhoid fever, Dr. M'Weeney on cultivation of, 526.
Baker, Dr. A. W. W.—report on the present aspect of dental caries, 200—artificial dental caries, 348.
Ball, Dr. C. B., limits of medicine and surgery in treatment of appendicitis, 172, 193.
Ball, Dr. M. V., essentials of bacteriology, *Rev.*, 245.
Ballance, Mr. Charles A., ligation of the great arteries in continuity, *Rev.*, 43.
Baltimore Presbyterian Eye, Ear, and Throat Charity Hospital Report, *Rev.*, 142.
Barcelona, 192.
Barry, Mr. P. J., case of ruptured uterus, 206.
Barton, Dr. J. K.—Tables for the diagnosis and treatment of syphilis, *Rev.*, 58—aneurysm or abscess, 169.
Battersby, Mr. J. Carter, aids to practical hygiene, *Rev.*, 142.
Beard, Dr. George M., medical and surgical uses of electricity, *Rev.*, 340.
Beardmore, Mr. W. Lee, drainage of habitable dwellings, *Rev.*, 344.
Belgium, diphtheria in, 154.
Bell, Dr. Robert, tuberculosis and its successful treatment, *Rev.*, 46.
Bennett, Dr. E. H., fracture of lower end of radius, 168.
Benson, Mr. A. H., horny epithelial tumour, 348.
Bewley, Dr. H. T.—report on practice of medicine, 247—chronic tubercular spinal meningitis, 347.
Birth-rate and influenza, 116.
"Blaud's pills," tabloids, 367.
Bordeaux, Archives Cliniques de, 350.
Boric acid in food, 159.
Boulton, Dr. Percy, index of diseases and their treatment, *Rev.*, 51.
Brain, operative procedures at the base of the, 216—effects of lead upon the, Dr. O'Carroll on, 172, 529, 530.
Breast, adenoma of, in childhood, Mr. Patteson on, 166.
British Medical Service, 288.

British Medical Association Meeting at Nottingham, 367.
Brockway, Dr. Fred. J., essentials of physics, *Rev.*, 339.
Brocq. Dr. L., traitement des maladies de la peau, *Rev.*, 133.
Bromides, 520.
Bruck, Ludwig, The Australasian Medical Directory and Handbook, *Rev.*, 509.
Brunton, Dr. Lauder, modern therapeutics, *Rev.*, 434.
Burdett, Mr. Henry C., Hospital Annual, *Rev.*, 140.
Buret, Dr. F., syphilis in ancient and pre-historic times, *Rev.*, 136.
Burroughs, Wellcome, & Co.—tabloids, 367—visiting list, *Rev.*, 428.
Buxton, Dr. Dudley W., anæsthetics, 378.
Byrom, Bramwell, atlas of clinical medicine, *Rev.*, 430.

Cameron, Sir Charles A.—report on public health, 59, 143—ætiology of typhoid fever, 59—the Victorian era, the age of sanitation, 289.
Canada, maritime provinces of, *Rev.*, 344.
Carcinoma of breast, recurrence of, 176.
Caries, dental, Dr. Baker on, 200, 348.
Carmichael, Dr. James, disease in children, *Rev.*, 506.
Cellulitis from extraction of a tooth, Mr. Langford Symes on, 177.
Cerebral—meningitis, trephining in, Mr. M'Ardle on, 17, 78—cyst, trephining for, Mr. W. I. Wheeler on, 170.
Cholera—in 1892, march of, by Dr. J. W. Moore, 210—plague of, in Hamburg, 463.
Childhood—diarrhœa in, Dr. J. M'Caw on, 105—adenoma of breast in, Mr. Patteson on, 166.
Children, recent works on diseases of, *Rev.*, 506.
Chlorate of potassium, poisoning by, 165.
Chloroform administration, 286—percentage of deaths in, 92.
Chorea, 517.
Clarke, Dr. Ernest, eyestrain, *Rev.*, 504.
"Climatologist, The," *Rev.*, 237.
Clinical records, 177, 272.
Cocain in the morphin habit, 521.
Colles, Dr. William, obituary notice of 94.
Coltman, Dr. Robert, jun., the Chinese, *Rev.*, 217, 346.
Compensation for accidents, 453.
Compressed medicines, 346.
Cooper, Mr. Alfred, diseases of the rectum and anus, *Rev.*, 230.
"Corpuscle, The," 331.
Cosgrave, Dr. E. M., notes on epidemic, influenza, 1891-92, 35.
Coupland, Dr. Sidney. Wilson Fox's diseases of the lungs and pleura, *Rev.*, 422.
Craddock, Mr. Samuel, Bath and her thermal waters, *Rev.*, 234.
Crowle, Mr. T. H. R., Pye's surgical handicraft, *Rev.*, 56.
Curgenven, Mr. J. B., antiseptic inunction, *Rev.*, 428.

Daland, Dr. Judson, International Medical Magazine, *Rev.*, 231.
Davis, Mr. Henry, guide to the administration of anæsthetics, *Rev.*, 244.
Death-rate, high, in Irish towns, by Dr. Strahan, 403.
Dental caries—report on the present aspect of, by Dr. Baker, 200—artificial, 348.
Detachment of the retina, by Mr. J. B. Story, 78, 390.
Diarrhœa in infancy and childhood, Dr. J. M'Caw on, 105.
Diffusion of virus of rabies, 331.
Diphtheria in Belgium, 154.
Doudney, Mr. G. H., the water-cure in the bedroom, *Rev.*, 48.
Drummond, Dr. David, physical signs of pleural effusion, 472.
Drunkenness, gold cure for, 190.
Dublin, tercentenary of the University of, 287.

Edmunds, Mr. Walter, ligation of the great arteries in continuity, *Rev.*, 43.
Edwards, Mr. F. Swinford, Cooper's diseases of the rectum and anus, *Rev.*, 230.
Effusion, pleural, Mr. W. L. Symes on, 1—physical signs of, Dr. Drummond on, 472.
Ehrlich's test of urine in typhoid fever, 91.
Eisenberg, Dr. James, bacteriological diagnosis, *Rev.*, 39.
Electrolysis in affections of the male urethra, by Dr. Pearson, 79.
Embolism in fatty heart, by Mr. W. L. Symes, 272.
Eminson, Mr. T. B. Franklin, epidemic pneumonia at Scotter, 161.
Encephalopathy, saturnine, Dr. O'Carroll on, 172, 529, 530.
Endothelioma of the lesser omentum, by Mr. C. Norman, 369.
Epidemic—influenza, 1891-92, notes on, by Dr. Cosgrave, 35—pneumonia at Scotter, Mr. Eminson on, 161.
Epilepsy, ethylene bromide in, 521.

Era, the Victorian, Sir C. Cameron on, 289.

Ergotin tabloids, 367.

Estländer's thoraco-plastic operation, Sir W. Stokes on. 527.

Ethylene bromide in epilepsy, 521.

Ewart, Dr. William—how to feel the pulse, and what to feel in it, *Rev.*, 223—cardiac outlines, *Rev.*, 224.

Falkiner, Dr. Ninian, notification of tuberculosis and primary syphilis, 268, 418.

Farquharson, Dr. A. C., ptomaïns and other animal alkaloids, *Rev.*, 242.

Fever, typhoid—ætiology of, 59—Ehrlich's test of urine in, 91—extensive intestinal ulceration in "walking," Dr. J. W. Moore on, 526—Dr. M'Weeney on cultivation of bacilli of, 526.

Fictitious temperature, 533.

Fish and leprosy, 286.

Flinn, Mr. Edgar, modern methods of sewage treatment, 270.

Flint, Dr. Austin, on simple urinary tests, 81.

Florence, tracheotomy in, 346.

Food, boric acid in, 159.

Fowl tuberculosis, Dr. Parsons on, 266, 324.

Fox, Mr. Michael, death of, 498.

Fox, Dr. Wilson, treatise on diseases of the lungs and pleura, *Rev.*, 422.

Gant, Mr. F. James, the Lord of humanity, *Rev.*, 55.

General paralysis, 513, 514, 515.

Gestation, period of human, 544.

Glasgow Medico-Chirurgical Society, 93.

Glossitis, pythogenic form of, Mr. W. L. Symes on, 319.

Gold cure for drunkenness, 190.

Goodfellow, Mr. John, dietetic value of bread, *Rev.*, 49.

Goodhart, Dr. James F., common neuroses, *Rev.*, 336.

Graves, Mr. W. R., ovarian cyst, 350—report on a case of traumatic malignancy, 525.

Griffiths, Mr. C. J., the rheumatic diseases (so-called), *Rev.*, 57.

Habit—morphin, 521—sulphonel, 522.

Hæmatocele, pelvic, Dr. T. More Madden on, 97.

Hamburg, plague of cholera in, 463.

Hamilton, Dr. Edward, the Surgery of to-day, 465, 527.

Hare, Mr. Evan H., Puschmann's history of medical education, *Rev.*, 117.

Harvard Medical School Association, 93.

Hayem, G., leçons de thérapeutique, *Rev.*, 54.

Health, public, report on, by Sir C. A Cameron, 59, 143.

Heart—displacement of the, in pleural effusion, Mr. Symes on, 1—thrombosis and embolism in fatty, by Mr. W. L. Symes, 272.

Helbing, Mr. H., modern materia medica, *Rev.*, 338.

Henoch, Dr. E., lectures on children's diseases, *Rev.* 54.

Heredity, influence of, 92.

Hiccough, 533—Mr. W. Langford Symes on, 488.

High death-rate in Irish towns, Dr. Strahan on, 403.

Horsley, Mr. Victor, structure and functions of the brain and spinal cord, *Rev.*, 332.

Hospital Annual, Burdett's, *Rev.*, 140.

Hospital relief, abuse of, 263.

Hospital, report of the Baltimore Presbyterian Eye, Ear, and Throat, *Rev.*, 142.

Human and fowl tuberculosis, Dr. Parsons on, 266, 324.

Human gestation, period of, 544.

Hunyadi János water, 533.

Hurst, Dr. Hubert Milnes, Marshall's practical zoology, *Rev.*, 246.

Hydatidiform mole, by Dr. C. Y. Pearson, 449.

Hyperpyrexia, case of, 421.

Hysterectomy, sacral, 463.

Ichthyol tabloids, 368.

India, ancient vaccination in, 179.

Infancy, diarrhœa in, Dr. M'Caw on, 105.

Influenza—epidemic, notes on, by Dr. Cosgrave, 35—and birth-rate, 116—microbe of, 160.

"In memoriam," William Colles, 94.

Insane, treatment of. in bed, 520.

Insanity in general, report on, 436.

International—Medical Magazine, *Rev.*, 231—Clinics, *Rev.*, 232.

Intra-laryngeal growth, Dr. R. H. Woods' case of, 175.

Intussusception, unique case of, 93.

Iodoform inunctions in tuberculosis, 38.

Ireland—Royal University of, calendar, *Rev.*, 42—Royal Academy of Medicine in, 76, 166, 264, 347, 447, 524.

Irish—towns, high death-rate in, by Dr. Strahan, 403—physician, honours to an, 463.

Jacob, Dr. David, case of absence of the uterus, double ovarian hernia, 450.

Johns Hopkins Hospital reports, *Rev.*, 237.

Jones, Mr. Herbert, Guide to the Examination in Sanitary Science, *Rev.*, 510.

Kelly, Dr. Howard A., report on gynæcology, *Rev.*, 237.
Kelynack, Dr. T. N., Transactions of the Pathological Society of Manchester, *Rev.*, 433.
Kentucky, early practitioners in, 421.
Klebs, Dr. E., die Behandlung der Tuberculose mit Tuberculocidin, *Rev.*, 52.

Lane, Mr. Hugh—differentiation in rheumatic diseases (so-called), *Rev.*, 46—the rheumatic diseases (so-called), *Rev.*, 57.
Laryngo-tracheotomy, by Mr. W. Langford Symes, 177.
Lawrence, Dr. E. S., essentials of medical electricity, *Rev.*, 245.
Lead on the brain, effects of, Dr. O'Carroll's specimen of, 172, 529, 530.
Leeward Islands Medical Journal, *Rev.*, 135.
Leprosy—tuberculin in, 464—and fish, 286.
Light reflex on the retinal vessels, by Mr. J. B. Story, 313.
Lille, Annales de la Policlinique de, 190.
Little, Dr. James, painless cancer of the liver, 265.
Liver, painless cancer of the, by Dr. Little, 265.
" Lo Sperimentale," 287.
Lowndes, Mr. Frederick W., the office of coroner, *Rev.*, 481.
Lung, aortic aneurysm opening into the left, Dr. J. W. Moore on, 496, 525.

M'Ardle, Mr. J. S., trephining for meningitis, 17, 78.
M'Caw, Dr. John, diarrhœa in infancy and childhood, 105.
M'Weeney, Dr., pedunculated sarcoma of cerebellum, 349—cultivations of typhoid bacilli, 526.
Malignancy, traumatic, Mr. Wheeler's case of, 524.
Malignant noma, 190.
Mammary carcinoma, recurrence of, 176.
Manley, Mr. Herbert, sanitary law, *Rev.*, 481.
March of cholera in 1892, by Dr. J. W. Moore, 210.
Marie, Dr. Pierre, essays on acromegaly, *Rev.*, 47.
Marshall, Dr. A. Milnes, jun., course of practical zoology, *Rev.*, 246.
Martindale, Mr. Wm.—the extra-pharmacopœia, *Rev.*, 225—coca and cocaine, *Rev.*, 236.
Massachusetts Medical Society. medical communications of the, *Rev.*, 233.
Maybrick, Mrs., 446.
Medical—communications of the Massachusetts Medical Society, *Rev.*, 233—education in the United States, 275—Magazine, 544.
Medicine—in Ireland, Transactions of the Royal Academy of. 76, 166, 264, 347, 447, 524—section of, in the Royal Academy of Medicine in Ireland, 76, 172, 529—report on practice of, by Dr. H. T. Bewley, 247.
Medico-Chirurgical Society of Glasgow, 93.
Meningitis, trephining for, Mr. M'Ardle on, 17, 78.
Mental diseases, report on nervous and, by Dr. R. Atkins, 436, 512.
Meteorological notes, 87, 185, 281, 361, 459, 539.
Microbe of influenza, 160.
Monster, double, Dr. W. J. Smyly's case of, 449.
Moore, Dr. J. W., aneurysm of aorta opening into the left lung and pleura, 496, 525 — extensive ulceration in "walking" typhoid fever, 526—sanitary and meteorological notes, 82, 180, 276, 351, 454, 534—march of cholera in 1892, 210.
More Madden, Dr. T., pelvic hæmatocele, 97.
Morphin habit, cocain in the, 522.
Morvan's disease, 516.

Nephrotomy after nephrectomy, 165.
Nervous and mental diseases, report on, by Dr. R. Atkins, 436, 512.
Neuro-anatomy and physiology, report on, 441.
Neuro-pathology and pathological anatomy, report on, 512.
Neuro-therapeutics, 520.
New preparations and scientific inventions, 367.
New Sydenham Society's publications, *Rev.*, 53, 54.
New York—population of, 365—typhus in, 366.
Nicholls, Dr. H. A. Alford, the Leeward Island Medical Journal, *Rev.*, 135.
Nixon, Dr. C. J., cancer of the stomach and liver, 264.
Nixon, Mr. F. A.—dry gangrene of finger, 350—lacerated wound of heart, 350.
Noma, malignant, 190.
Norman, Mr. Conolly—alveolar sarcoma, 167—endothelioma of the lesser omentum, 369.
Notes on epidemic influenza, 1891-92, Dr. Cosgrave on, 35.

Notification of pulmonary tuberculosis and primary syphilis, by Dr. N. Falkiner, 268, 418.
Nottingham. meeting of the British Medical Association at, 367.
Nursing Directory for 1892, *Rev.*, 132.

Oatmeal pyrosis, 286.
Obstetrics, section of, in the Royal Academy of Medicine in Ireland, 447.
O'Carroll, Dr. J., effects of lead on the brain, 172, 529, 530.
Ohmann-Dumesnil, Dr. A. H., Buret's syphilis in ancient and pre-historic times, *Rev.*, 136.
Oleomargarine, 191.
Oliver, Dr. Thomas, lead poisoning, *Rev.*, 226.
Omentum, endothelioma of the lesser, by Mr. C. Norman, 369.
O'Neill, Dr. Henry, advances made in surgical practice, 395, 479.
Operative interference in suspected perforation of chronic ulcer of the stomach, Dr. Parsons on, 26. 76.
Ormerod, Dr. J. A., diseases of the nervous system, *Rev.*, 48.
Osler, Dr. William, principles and practice of medicine, *Rev.*, 40.

Paralysis, general, 513, 514, 515.
Park, Dr. Wm. Hallock, diphtheria and allied pseudo-membranous inflammations, *Rev.*, 510.
Parsons, Dr. Alfred R.—operative interference in suspected perforation of chronic ulcer of the stomach, 26, 76—human and fowl tuberculosis, 266, 324.
Pathology, section of, in the Royal Academy of Medicine in Ireland, 166, 264, 347, 524.
Paton, Dr. Noël, and Dr. Batty Tuke, reports from the laboratory of the Royal College of Physicians of Edinburgh, *Rev.*, 499.
Patteson, Mr. R. G., adenoma of breast in childhood, 166.
Paul, Dr. Maurice E., Sutton's lectures on pathology, *Rev.*, 130.
Pearson, Dr. Yelverton—electrolysis in affections of the male urethra, 79—appendages removed for uterine fibromyoma, 447 — hydatidiform mole, 449.
Pelvic hæmatocele, Dr. T. More Madden on, 97.
Period of human gestation, 544.
Periscope, 91, 190, 286, 365, 463, 544.
Philadelphia, Alvarenga prize of the College of Physicians of, 523.
Pierce, Dr. Norval H., Eisenberg's bacteriological diagnosis, *Rev.*, 39.
Pleura, left, aortic aneurysm opening into, Dr. J. W. Moore on, 496, 525.
Pleural effusion—Mr. W. L. Symes on, 1—physical signs of, Dr. Drummond on, 472.
Pneumonia, epidemic, at Scotter, 161.
Poisoning by potassium chlorate, 165.
Politzer, Dr. Adam, dissection of the human ear, *Rev.*, 126.
Popular prescriptions, 93.
Population of New York, 365.
"Post-Graduate, The," 192.
Potassium, chlorate, poisoning by, 165.
Power, Mr. Henry, lexicon of medicine, *Rev.*, 53.
Prescriptions, popular, 93.
Public health, report on, by Sir C. A. Cameron, 59, 143.
Pulmonary tuberculosis, notification of, Dr. N. Falkiner on, 268, 418.
Puschmann, Dr. Theodore, history of medical education, *Rev.*, 117.
Pyrosis, oatmeal, 286.
Pythogenic form of glossitis, Mr. W. L. Symes on a, 319.

Question-Compends, Saunders', *Rev.*, 245, 339.

Rabies, diffusion of virus of, 331.
Radius, fracture of lower end of, Dr. E. H. Bennett on, 168.
Records, clinical, 177, 272.
Recurrence of mammary carcinoma, 176.
Redmond. Dr. Joseph M., perforating ulcer of stomach, 348.
Reid, Dr. George, practical sanitation, *Rev.*, 431.
Report—on public health, by Sir C. A. Cameron, 59, 143—on practice of medicine, by Dr. H. T. Bewley, 247—on nervous and mental diseases, by Dr. Ringrose Atkins, 436, 512.
Report of the Presbyterian Eye, Ear, and Throat Charity Hospital, Baltimore, *Rev.*, 142.
Reports, special, 59, 143, 247, 436, 512.
Resorcin tabloids, 368.
Retina, detachment of, Mr. J. B. Story on, 78, 390.
Retinal vessels, light reflex on the, Mr. J. B. Story on, 313.
Rhinoscleroma, Dr. W. Story on, 267.
Ridge, Dr. J. James, alcohol and public health, *Rev.*, 435.
Roberts, Dr. R. Lawton, illustrated lectures on nursing and hygiene, *Rev.*, 244.
Rockwell, Dr. A. D., medical and surgical uses of electricity, *Rev.*, 340.
Royal—University of Ireland, calendar, *Rev.*, 42—Academy of Medicine in Ireland, 76, 166, 264, 347, 447, 524.

Ruptured uterus, case of, by Mr. P. J. Barry, 206.

Sacral hysterectomy, 463.
St. Thomas's Hospital reports, *Rev.*, 429.
Sanitary and meteorological notes, 82, 180, 276, 351, 356, 454, 534.
Sanitation, age of, Sir Charles Cameron on the, 289.
Sarcoma, alveolar, Mr. C. Norman on, 167.
Saturnine encephalopathy, Dr. O'Carroll on, 172, 529, 530.
Saunders' Question-Compends, *Rev.*, 245, 339.
Schäfer, Mr. E. A., essentials of histology, *Rev.*, 52.
Schweinitz, Dr. G. E. de, diseases of the eye, *Rev*, 141.
Scientific inventions, 367.
Scott, Dr. J. Alfred, actinomycosis, 525.
Scotter, epidemic pneumonia at, 161.
Sedgwick, Dr. Leonard W., lexicon of medicine, *Rev.*, 53.
Sewage treatment, modern methods of, by Mr. Edgar Flinn, 270.
Shoemaker, Dr. J. V., materia medica and therapeutics, *Rev.*, 53.
Signs, physical, of pleural effusion, Dr. Drummond on, 472.
Smith, Dr. J. Lewis, diseases of infancy and childhood, *Rev.*, 224.
Smith, Mr. J. Greig, abdominal surgery, *Rev.*, 56.
Smith, Dr. Walter G., syphilitic gummata of liver and spleen, 167—President's address to Section of Medicine in the Royal Academy of Medicine in Ireland, 529.
Smyly, Dr. W. J., double monster, 449.
Society — Glasgow Medico-Chirurgical, 93—Massachusetts Medical, *Rev.*, 233.
Souza-Leite, Dr., Essays on Acromegaly, *Rev.*, 47.
State Medicine, section of, in the Royal Academy of Medicine in Ireland, 268.
Stewart, Dr. D. D., essentials of medical electricity, *Rev.*, 246.
Stokes, Sir William, Estländer's thoracoplastic operation, 527.
Stomach, suspected perforation of chronic ulcer of the, Dr. Parsons on, 26, 76.
Stone, Mr. George, Politzer's dissection of the human ear, *Rev.*, 126.
Story, Mr. J. B.—detachment of the retina, 78, 390—light reflex on the retinal vessels, 313.
Story, Dr. W. G. T., on rhinoscleroma, 267.
Strahan, Dr. John, high death-rate in Irish towns, 403.
Sulphonal habit, 522.
Surgery, section of, in the Royal Academy of Medicine in Ireland, 78, 169, 527.
Surgery of to-day, Dr. Hamilton on, 465.
Surgical practice, advances made in, Dr. Henry O'Neill on, 395, 479.
Sutton, Mr. Henry G., lectures on pathology, *Rev.*, 130.
Symes, Mr. W. Langford—clinical observations on pleural effusion with displacement of the heart, 1—extraction of a tooth followed by cellulitis, 177—thrombosis and embolism in fatty heart, 272—pythogenic form of glossitis, 319—hiccough, 488.
Syphilis—primary, notification of, by Dr. Falkiner, 268, 418—as a cause of tabes, 512—cerebral disease from congenital, 513.
Syphilitic gummata of liver and spleen, Dr. Walter Smith on, 167.

Tabes, syphilis as a cause of, 512.
Tabloids, by Burroughs, Wellcome, & Co., 367.
Tanner, Dr. Thomas H., index of diseases and their treatment, *Rev.*, 51.
Tercentenary of the University of Dublin, 287.
Thomson, Dr. J., Henoch's lectures on children's diseases, *Rev.*, 54—congenital obliteration of the bile ducts, *Rev.*, 511.
Thrombosis in fatty heart, by Mr. W. L. Symes, 272.
Thyroid extract after thyroidectomy, 366.
Tooth, extraction of, followed by cellulitis, Mr. Langford Symes on, 177.
Tracheotomy in Florence, 346.
Transactions of the—Royal Academy of Medicine in Ireland, 76, 166, 264, 347, 447, 524—Association of Amercan physicians, *Rev.*, 220—American Orthopædic Association, *Rev.*, 244—Medical and Chirurgical Faculty of the State of Maryland, *Rev.*, 345—Pathological Society of Manchester, *Rev.*, 433.
Traumatic malignancy, Mr. Wheeler's case of, 524.
Trephining—for meningitis, Mr. J. S. M'Ardle on, 17, 78—for cerebral cyst and word-blindness, Mr. W. I. Wheeler on, 170.
Treves, Mr. Frederick, student's handbook of surgical operations, *Rev.*, 236.
Tuberculin—in the diagnosis of tuberculosis in cattle, 92—in leprosy, 464.
Tuberculocidin, 464.
Tuberculosis—iodoform innunctions for, 38—human and fowl, Dr. Parsons on, 266, 324—notification of, Dr. Falkiner on, 268, 418.

Tuke, Dr. Batty, and Dr. Noël Paton, reports from the laboratory of the Royal College of Physicians of Edinburgh, *Rev.*, 499.
Tuke, Dr. Hack, dictionary of psychological medicine, *Rev.*, 427.
Typhoid fever — ætiology of, 59—Ehrlich's test in, 91—Dr. J. W. Moore's case of, 526—cultivations of bacilli of, Dr. M'Weeney on, 526.
Typhus in New York, 366.

Ulcer, chronic, of the stomach, Dr. Parsons on operation in suspected perforation of, 26, 76.
University—Royal, of Ireland, calendar. *Rev.*, 42—of Dublin, Tercentenary of the, 287.
United States, medical education in the, 275.
Unna, Professor, of Hamburg, 523.
Urinary tests—simple, Dr. Austin Flint on, 81—Ehrlich's, in typhoid fever, 91.
Uterine fibro-myoma, appendages removed for, by Dr. C. Y. Pearson. 447.
Uterus—ruptured, case of, by Mr. P. J. Barry, 206—dilatation of the, by Dr. Lombe Atthill, 451—absence of, by Dr. David Jacob, 450.

Vaccination, ancient, in India, 179.
Valdepeñas wines, 368.
Vermiform appendix, Dr. C. B. Ball on diseases of the, 172, 193.
Victorian era, Sir Charles Cameron on the, 289.
Vital statistics, 82, 180, 276, 351, 356, 454, 534.

"Walking" typhoid fever, Dr. J. W. Moore on, 526.
Water, some peculiar specimens of, 146.
Westcott, Mr. W. Wynn, the extra pharmacopœia, *Rev.*, 225.
Westland, Dr. Alfred, the wife and mother, *Rev.*, 243.
Wethered, Dr. Frank J., medical microscopy, *Rev.*, 508.
Wheeler, Mr. W. Ireland, trephining for cerebral cyst and word-blindness, 170 —case of traumatic malignancy, 524.
White, Dr. W. Hale, materia medica, pharmacy, pharmacology, and therapeutics, *Rev.*, 57.
Wilks, Dr. Samuel, revision of Sutton's lectures on pathology, *Rev.*, 130.
Woodhead, Dr. G. Sims, practical pathology, *Rev.*, 240.
Woods, Dr. R. H., intra-laryngeal growth, 175.
Works—on intestinal surgery, *Rev.*, 229 —on diseases of children, *Rev.*, 506.
Wright, Mr. G. A., and Dr. Henry Ashby diseases of children, *Rev.*, 507.
Wyse, Dr. A. Tucker, Alpine winter in its medical aspects, *Rev*,. 234.

Year-book of the scientific and learned societies of Great Britain and Ireland, *Rev.*, 340.

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